RETROFITTING CLOSED GOLF COURSES

A Thesis
Presented to
The Academic Faculty

By

Audrey L. Plummer

In Partial Fulfillment
Of the Requirements for the Degrees
Master of Architecture AND Master of City and Regional Planning

Georgia Institute of Technology

August 2014

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Approved by:
Richard Dagenhart
School of Architecture
Georgia Institute of Technology

Dr. William Drummond
School of City and Regional Planning
Georgia Institute of Technology

Ellen Dunham-Jones
School of Architecture
Georgia Institute of Technology

Date Approved: March 28, 2014

ACKNOWLEDGEMENTS

Thanks to everyone including Ellen, Richard, Bill, and the Greater Hidden Hills Community Development Corporation.

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SUMMARY

In the '80s and '90s in America, residential developers believed that the best way to make money was to build a golf course community. Premiums of homes on golf courses ranged from 30% to 100% more than the price of a similar home not adjacent to a course. Today, the bottom has fallen out of the golf market leaving over 2,400 courses closed in America. Residential homes bordering a closed golf course experience an 11.7% loss of value. Many owners and potential developers want these large parcels of land to be up-zoned so they can build higher density residential and make a profit. Neighbors do not want to lose their greenspace and public officials do not want to be seen as harming single-family residential. This thesis argues that to retrofit a closed golf course, developers, community members and other stakeholders must first understand the morphological and environmental implications of the different types of golf courses, the context surrounding closed courses and the location of these courses in a greater regional area. By understanding closed golf courses in this way, a framework can be established that results from negotiation among golf course residents, neighbors, developers and public officials.

CHAPTER 1: INTRODUCTION

This thesis originated out of a very real problem in this author's neighborhood in Stone Mountain, Georgia. In 2005, the Hidden Hills Golf Course closed after several attempts to make a profitable course. It was the last in a line of amenities offered by the '70s era suburban neighborhood. First the pool, then tennis courts, now the clubhouse and golf course. Any hopes of the land being reopened were dashed after the real estate crash in 2008. Deer, coyotes and other wildlife re-inhabited the land. Scores of young men from the immediate surroundings congregate weekly on the golf course to ride ATVs and dirt bikes (much to the chagrin of the neighbors).

In 2013, a group of dedicated neighbors formed the Greater Hidden Hills Development Corporation to economically revitalize this majority minority area. The issue at the top of their list was the golf course.

This thesis is intended to provide a guide for planners, urban designers, architects and community members wondering what to do about a closed golf course in their area. Closed golf courses pose huge problems for communities because of vandalism, overgrowth and lower property values. They also present big opportunities because, at 200 acres on average, they offer large parcels of greenspace and developable land. Because golf courses are atypical parcel assemblages, design solutions have to be creative and out of the box. Also, these solutions must respond, in many cases, to neighbors who bought property

on a golf course expecting it to remain open space. Policy has an important role to play in ensuring that neighbors are treated fairly.

This thesis is split into two parts to help stakeholders understand the full complexities of the issues surrounding closed golf courses. Part I sets up the current situation of closed golf courses in America. The background gives an overview history of golf in America and explains the current state of the industry. The literature review discusses the problems with closed golf courses issues and efforts to deal with closed courses. An overview of legal problems expands on potential issues a community could face with regards to a closed golf course. Part I concludes with a statistical analysis of the effect of closed golf courses on property values.

Part II

Part II discusses strategies for dealing with a closed golf course. First, a literature review discusses current efforts to repurpose, redevelop, and retrofit closed golf courses. An overview of morphologies discusses the different types of golf courses and surrounding context. This information informs the case study analysis of nine different types of golf courses. This part concludes with policy recommendations.

PART I: CURRENT SITUATION

CHAPTER 2: PART I INTRODUCTION

The problem of closed golf courses is a national problem. There are about 2,400 closed golf courses in America, most of which are clustered in major metropolitan areas and through the Sunbelt. People with closed golf courses in their communities may believe the problem is specific to their area or that it is a temporary symptom of the housing market crash. Planners and municipalities may not fully grasp the array of problems that accompany closed golf courses. Problems plaguing closed golf courses include declining real estate values of surrounding houses, code violations, arson, overgrowth and trespassing.

The large amount of golf course closings is not a result of the housing crash, as the golf industry market went bust in 2006. Lack of demand for the game of golf and an overbuilding of golf courses in the 1990s and early 2000s created the crash. The real-estate market crash did exacerbate the problem, however.

Part I describes the current situation of closed golf courses in America before Part II explores how to address this problem. Chapter 3 gives a brief overview of the history of golf and the current numbers of golf facilities, golfers and closed courses in America. Chapter 4 is a literature review of the problems plaguing closed golf courses and the surrounding areas. Chapter 5 explains the various lawsuits between owners of closed golf courses and municipalities that do not want to allow development on greenspace. Chapter 6 discusses how, using

property assessor data, it can be concluded that a closed golf course costs a residential property 11.7% of its value.

CHAPTER 3: BACKGROUND

HISTORY OF GOLF IN AMERICA

Golf has a long history. It originated in Scotland in the 15th century then spread to the U.S. by the 1890s. Once the game jumped across the Atlantic Ocean, golf course development followed a boom-bust cycle. There were three boom periods in the number of new golf courses constructed, and each peaked in 1930, 1970 and 2000. Each boom was followed by a "bust," which is defined simply as a prolonged downturn in the number of golf courses built. This cycle "follow[ed] the fluctuations of the American economy and its social trends (Graves 7)."

Around the turn of the century, golf was a game played predominately by the upper class at private clubs. In the 1920s, golf expanded in popularity. Land was cheap, funds were plentiful and developers rushed to capitalize on the new American pastime. Between 1923 and 1929, approximately 600 golf courses were opened each year (Adams and Rooney 423). 80% of these courses were private clubs that ostentatiously catered to the new moneyed elite of the Roaring Twenties. In his analysis of the period, David Hueber succinctly notes, "This image as being a game for the rich would forever brand golf as an elitists' game. Amateur sports in general, and golf specifically, was the bastion of the upper class...(Hueber and Worzala 10)." The market crash in 1929 dealt a blow to the industry. Many courses closed and few opened during the Great Depression

and World War II eras. The end result was that there were fewer open golf courses in 1953 than in 1929 (Graves 7).

Golf gained popularity again in the 1950s by a growing middle class and public figures showing an interest in golf. Most of the new golf courses were open to the public; in 1960 the private-public ratio was 50/50 and by 1970 it was 45/55. The 1960s brought about the new practice of coupling golf course development and suburban residential development. Developers discovered that by adding a golf course to their subdivision, they could enhance lot sale values and increase sales turnover. Because developers needed to maximize premium priced golf course frontage lots, this new model nearly doubled the average acres of a golf course to 150 acres. From this point on, new golf course development was tied closely to the fortunes of the real estate industry (Hueber and Worzala 13).

In the 1970s, the recession hit the real estate business and the golf industry. Golf course development slowed significantly, causing many industry insiders to feel that golf course development had reached its limit. Adding to this problem was the perception among baby boomers that golf was a game for rich, old, overweight white males and that tennis was the sport to play (Hueber and Worzala 14).

The third boom in golf course development occurred between 1990 and 2000. It was driven by the belief that as the Baby Boomer generation aged, they would gravitate to the sport of golf. The National Golf Foundation (NGF), with the help of McKinsey and Company, heavily promoted this idea and coined the slogan "A Course a Day" to spur real estate developers to keep up with the predicted demand (Hueber and Worzala 14-15). The NGF ran ads with this slogan during

PGA tours, and the media carried the slogan and further promoted it. These factors led to the "new perception in the business community that there was a great opportunity for profitable investments to be made in the golf industry in the 1990s (Hueber and Worzala 15)." Real estate developers did manage to build a course a day, averaging 400 new courses per year during the 1990s. The industry also attracted millions of new players.

The biggest driver of golf course development was the idea that having a golf course in a community was *the* amenity to promote as a selling point. In a study from 1995, researchers looked at the difference in selling prices of single-family residential properties abutting a golf course (Do and Grudnitski 261). The researchers fitted a standard hedonic pricing model to a sample of 717 sales transactions from a suburban area. Then they employed a matched-pair research design to hold constant the price effects of other location factors on these golf course properties. After the analysis, they found that building a single-family home overlooking a golf course could add 7.6% to the value of the property (Do and Grudnitski 267).

Along with quantitative studies on how much more properties on golf courses sold during the real estate boom, there have also been qualitative studies looking at how much people perceive living next to a golf course is worth. In 2005, one research team surveyed 707 homeowners in a North Carolina subdivision, of which 466 (66%) responded (Nicholls and Crompton 37). The team found that most of those whose homes abutted the course recognized they paid some sort of premium for that location(Nicholls and Crompton 37). How much of a premium they thought they paid varied widely. 59% of residents estimated it at

20% or less and 15% believed they paid a premium of 40% or more (Nicholls and Crompton 37). Over 60% of those who did not live adjacent to the golf course responded that they paid no premium to reside in the golf course community (Nicholls and Crompton 37). The team also asked residents how many, if any, regular (minimum once a month) golfers resided in the home, and in the absence of regular golfers what amenities attracted that household to this golf course community (Nicholls and Crompton 37). Researchers found that only 29% of households had a regularly playing member (Nicholls and Crompton 37). 24.3% of those households with no regularly playing members cited views of the golf course as the main factor for choosing the subdivision, making this the most common reason(Nicholls and Crompton 37). When asked to rank a list of factors by influence on decision to purchase a home in the subdivision, "views of the golf course" was fifth on the list by those who lived adjacent to the golf course and 18th by those not adjacent to it (Nicholls and Crompton 37).

In 1990, *The New York Times* published an article on the rise in the economics of golf course communities. For most developers, especially those in large metropolitan areas, building a standalone golf course was too expensive. Therefore, they integrated the courses with single-family residential (and sometimes an office park), charging enough per home to recoup the loss. Many developers use the golf course to satisfy municipal or state requirements for open space in their housing developments. At the time this *New York Times* article was written, some developers were concerned that there would be a shortage of affordable golf courses. In the article, developer Herb Sambol is quoted as saying, "Because of the economic and regulatory environment, the number of

new courses is going to decrease and they are going to become more expensive for everybody' (Lueck)."

In 1991, *The New York Times* published another article on golf course residential, this time on the premium prices paid on properties adjacent to golf courses. Builders of ordinary subdivisions were being buffeted by weak markets and scarce financing. Developing a golf course community was less risky. Developers built a large amount of golf course communities to capitalize on the huge sales advantage. The premiums ranged from 30% to 100% more than the price of a similar home not adjacent to a course. Such homes started at around $350,000 and often exceeded $1 million. When this particular article was written, developers were already expressing fears that golf courses were being overbuilt and a golf course bust would soon follow (Hylton).

The NGF and some perceptive developers warned of the downfall, due to the overbuilding of golf courses that were not financially sustainable. The third bust started in 2006, but it was not fully felt until the real estate market crashed in late 2008. Heuber tersely sums up the fallout:

> *"So, what the golf industry has received in the final divorce settlement between golf and real estate development is a failed golf course real estate development model with little hope for any reconciliation between the parties. More importantly, the offspring golf courses from this union are not meeting the needs of the golf industry's ultimate consumers, which have significant long-term business ramifications. Many of the golf courses are not economically viable, going out of business, or just barely getting by and hoping things will get better when the economy improves. Consequently, what the golf industry inherited were golf courses that had too much debt, were too expensive to maintain and were not economically viable enterprises. Compounding this problem was that these golf courses were not affordable or fun for the average golfer and they took too long to play. Unknowingly,*

> *the golf industry has created a monster (Hueber and Worzala 20).*"

CURRENT STATE OF GOLF COURSES IN AMERICA

Golf course development was a sure way to make a profit in the '80s and '90s. Lured by the promise of a 7.6% gain in home values on properties bordering a golf course(Do and Grudnitski 261), developers overbuilt golf course communities. What's more, this oversaturation came as the number of golf players declined by about 4 million since 2005 (Figure 1).

A 2012 article in *Golf Course Industry* magazine discussed the supply side market correction that began in 2006. It succinctly states the problem:

> *"The net reduction in courses was overdue – growth in the number of golfers and rounds played over the past 20+ years was not nearly sufficient to support all of the courses that were built during the boom that began in the early '90s. Since 1991, the number of 18 [hole equivilent] in the U.S. has grown by 30%, outpacing golfer growth of 6.5% over that span. (GCI)"*

The author also quotes Joe Beditz, President and CEO of the NGF: "The slow correction that is now occurring is very much overdue and necessary, to help return the golf course business to a more healthy equilibrium between supply and demand." (GCI)

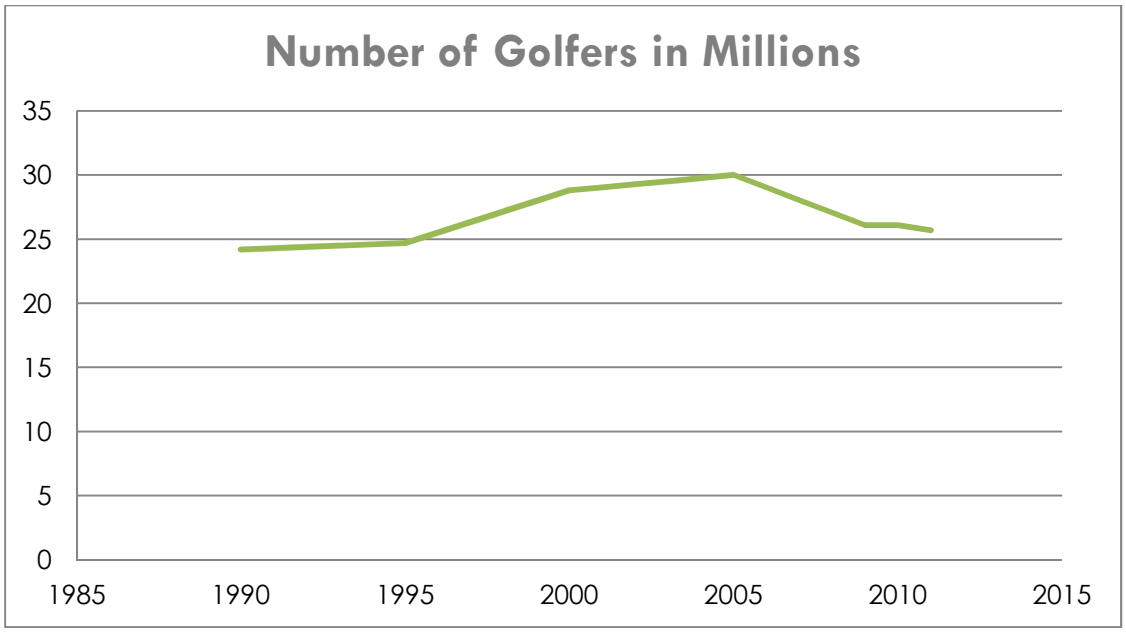


Figure 1 Number of Golfers in Millions
(NGF "National Golf Foundation") see appendix for table

The number of facilities peaked in 2004 and has declined by 438 since then (Figure 2). While closings have historically following the boom-bust cycle of the golf industry, the decline in the number of openings has caused the decline in the number of open golf facilities (Figure 3 and Figure 4).

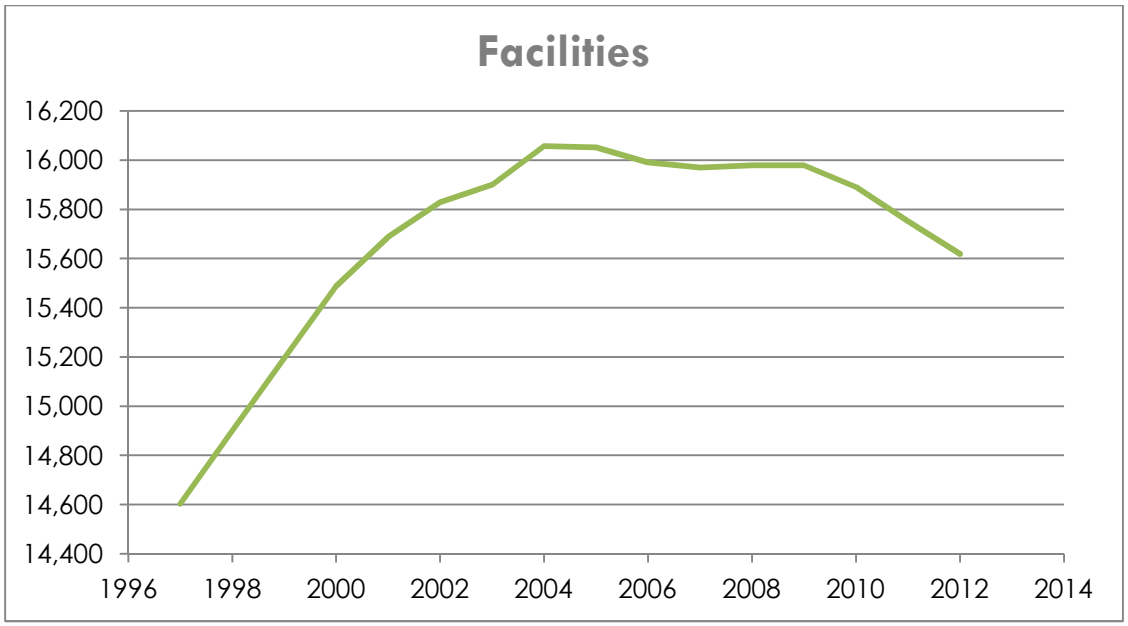


Figure 2: Facilities
(NGF "National Golf Foundation") see appendix for table

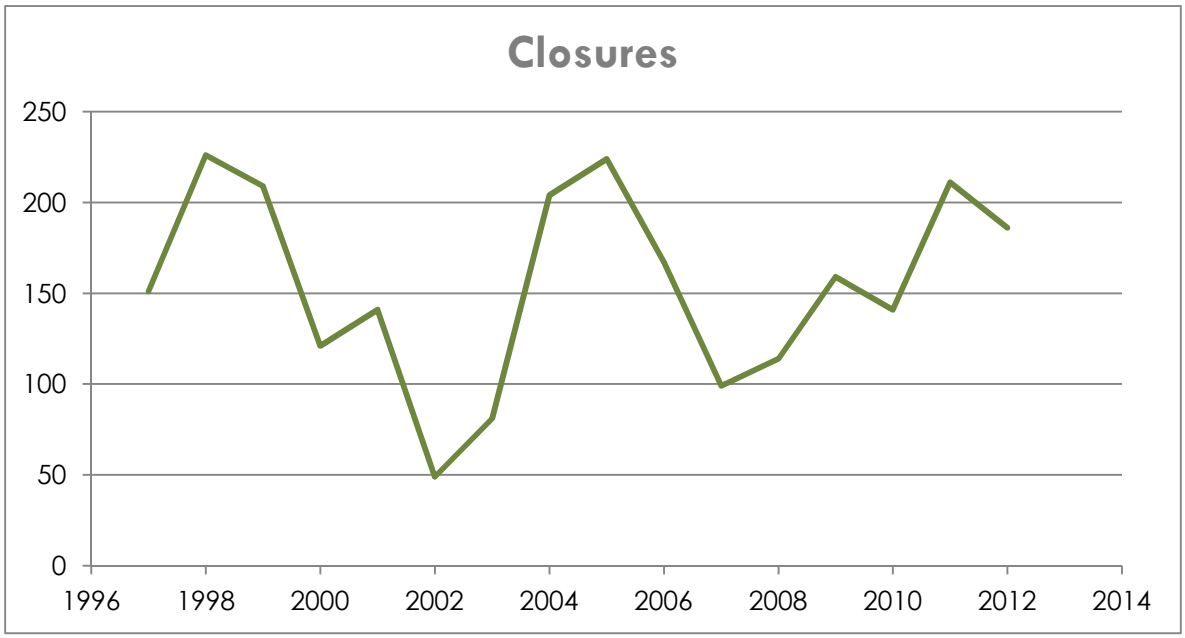


Figure 3: Closures
(NGF "National Golf Foundation") see appendix for table

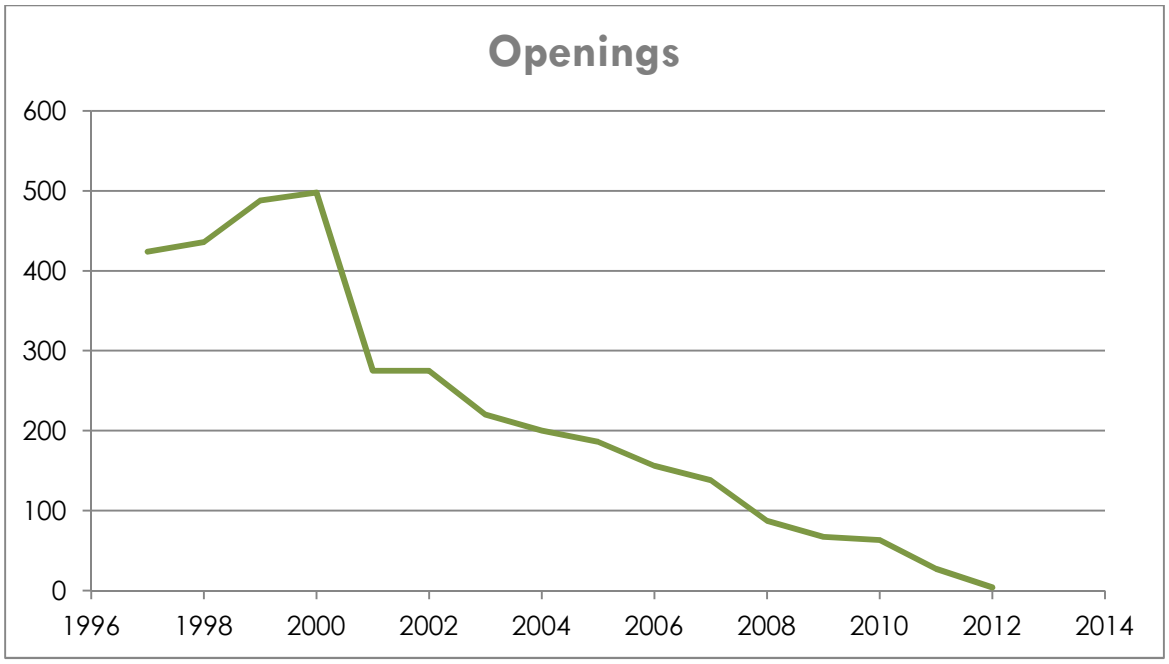


Figure 4: Openings
(NGF "National Golf Foundation") see appendix for table

The NGF estimates that 1,400 facilities (some with multiple courses) have closed their doors since 2001(NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?"). From data procured from NGF going back to 1997, there are approximately 2,400 closed courses today in the U.S. The majority of the closures in the last 15 years have happened in the following states: Florida, Texas, Michigan, Georgia, and Pennsylvania (Figure 5) (NGF "National Golf Foundation"). Closures are also clustered around major metropolitan centers and through the Sunbelt (Figure 6).

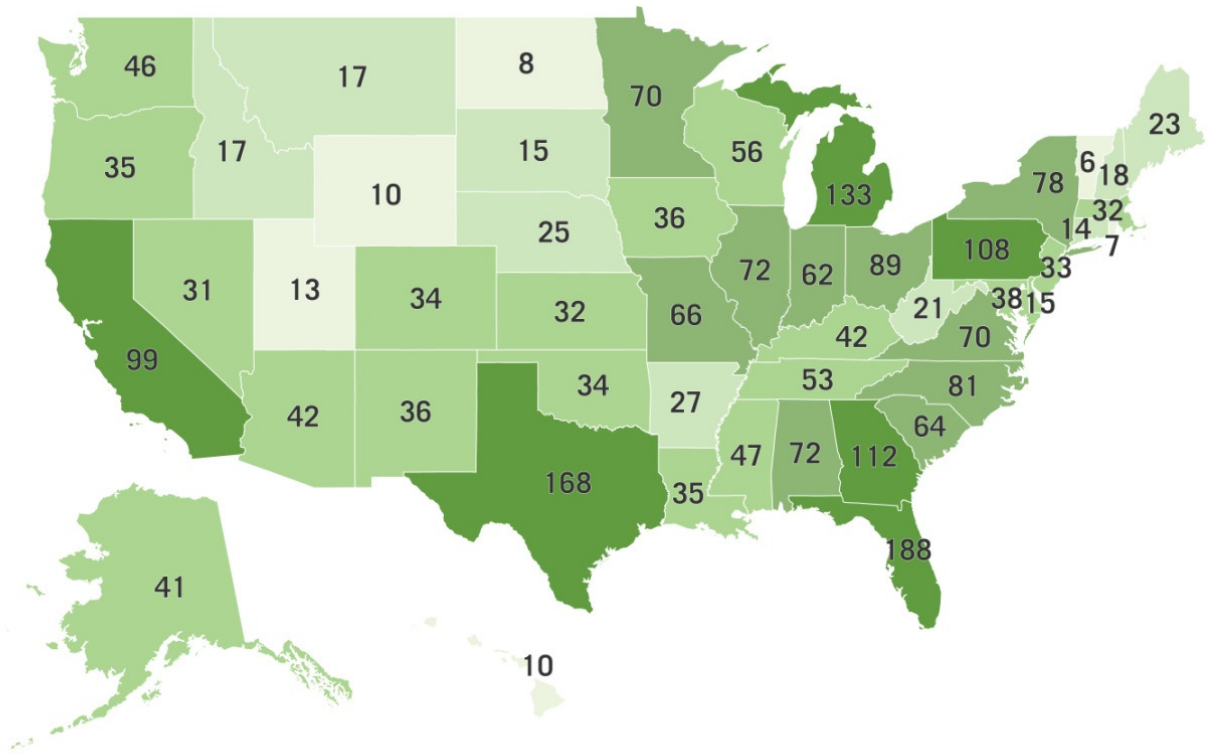


Figure 5: Closings by State
(NGF "National Golf Foundation")

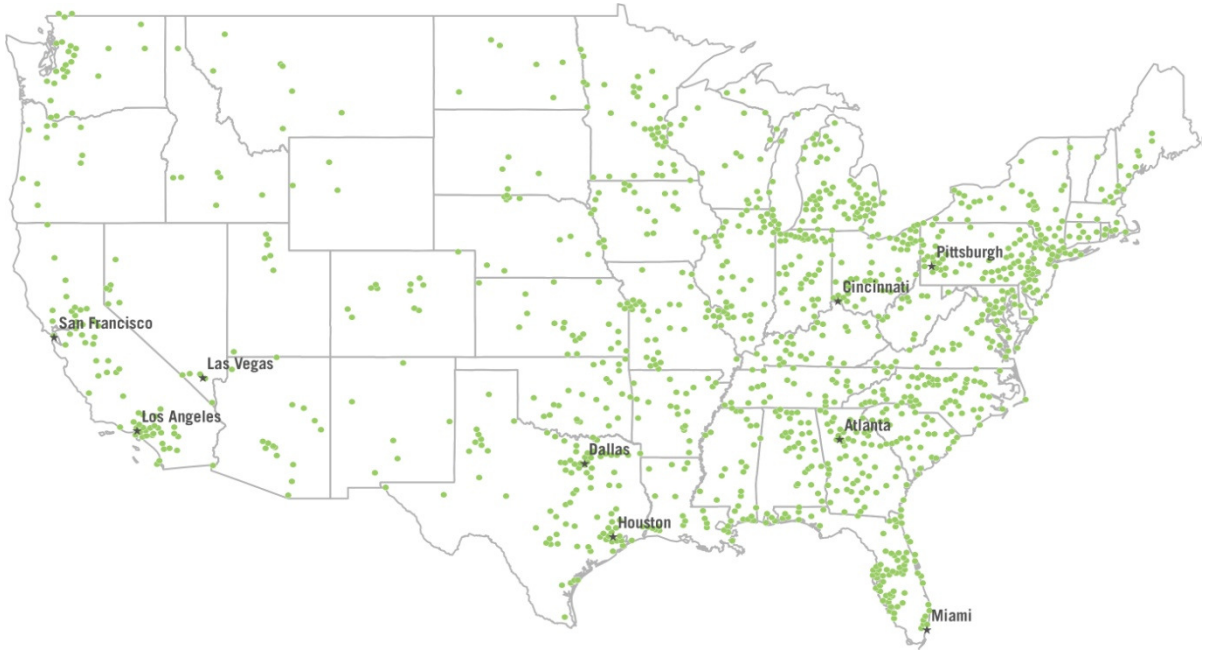


Figure 6: Closings by Region
(NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?")

In 2013, NGF did a study of 60 closed golf courses and concluded that "in many markets, the overbuilding in the upper middle and premium price point daily fee segments, and the subsequent discounting of green fees at these facilities due to oversupply, resulted in downstream stress on the lower fee/lower quality public facilities" (NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?") which were subsequently forced to closed. Municipal golf courses fall in this category of lower-end golf courses that were eschewed by golfers suddenly able to play higher-quality golf courses for a lower price.

Counterintuitively, the NGF also noticed that golf courses in the vicinity of a closed course did not see a noticeable uptick in players, meaning that golfers simply stopped playing golf if their course closed(NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?"). Reasons for this phenomenon include the concurrent economic downturn (NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?"). Indeed, in 2012, the NGF reported a negative change in people's perceptions on the affordability of golf (NGF "Changing Perceptions of Golf's Affordability – Has the Supply/Demand Imbalance Lowered the Price of Golf?").

These perceptions further erode the market demand for golf courses, and they will continue to cause more courses to close. While the golf industry has previously banked on the Baby Boomers to help bolster the industry, due to the market crash in 2008 and the ongoing recession, this may not come to pass. The NGF reports:

> *"Boomers lack confidence in their ability to live comfortably through their retirement years. Most Boomers won't benefit from company sponsored pension plans like their parents did, and the Great Recession crushed home values and hit retirement portfolios hard. (NGF "Will Baby Boomers Go Bust?")"*

The NGF estimates that Boomers could contribute to a 5% to 15% increase in rounds played which should help the golf industry (NGF "Will Baby Boomers Go Bust?"). However, Baby Boomers are less than one-third of current golfers and participation among younger demographics is declining (NGF "Will Baby Boomers Go Bust?").

Golf courses will more than likely continue to close, due to lower market demand for the game. Because of this lowered demand, the closed courses will likely never reopen as golf courses. At an average of 200 acres a course for each of the estimated 2,400 closed courses, there are 480,000 acres of vacant green field (Hylton). What are the implications of this vacant land? What problems does it cause and what will be done with it?

The literature review in the next chapter begins to elaborate on these questions and Part II will propose more concrete policy and design recommendations.

CHAPTER 4: LITERATURE REVIEW

The literature review discusses the problems with having a closed golf course in a community. This information will be helpful in Chapter 11 when running analysis on property values in communities with closed or with open golf courses. It is also helpful when talking to community members and policy makers on why a retrofit is beneficial for them.

PROBLEMS CAUSED BY CLOSED AND ABANDONED GOLF COURSES

Having a closed golf course in one's community brings with it a host of difficulties. These problems encompass overgrowth, vandalism, arson, illegal dumping, declining property values and emotional distress for neighboring property owners.

In 1991, Rae Kotler took over the 55-acre Boca Raton Executive Country Club, located in Florida, from her invalid father. She struggled to keep the small course solvent, but was ultimately unsuccessful. Closed in 2006, the course now "sits empty and overgrown, and neighbors who bought their homes for fairway views call it an eyesore. (Monson "Vacant Golf Course Stirs Conflict between Neighbors, Owner")" The property is run down, and problems have been compounded by the fact that city code prohibits the installation of a chain link fence:

> *"Cart paths are overgrown with weeds, and empty cans and bottles peek from beneath shaggy shrubbery. Curlicues of blue spray-paint loop across the faded stone sign at the entrance to the 55-acre property. And fresh-turned dirt scars the plot where the clubhouse stood before an arsonist set fire to it. (Monson "Vacant Golf Course Stirs Conflict between Neighbors, Owner")"*

In December of 2011, arsonists set fire to the long vacant country club building igniting a blaze that lasted four hours and caused over $1 million in damages. Investigators have been unable to identify a culprit (Monson "Arson Caused Boca Raton Executive Country Club Fire, Officials Say"). The arson is the culmination of problems plaguing Kotler and the closed golf course. She says, "I've had to deal with all of it — arson, vandalism, people stripping every bit of metal, dumping stuff, trespassing. People just have no regard for my property. (Monson "Vacant Golf Course Stirs Conflict between Neighbors, Owner")" Kotler has spent an estimated $75,000 per year maintaining the closed course and has had to deal with 26 code violations. She is working to sell the course. Since the course is so small, the land will probably be parceled off for single-family housing. Neighbors are vehemently opposed to residential development. Longtime resident Sybil Boyd has a house with a backyard that overlooks the course. She says, "We all bought homes expecting to live on a golf course...what we would like to see is to have it continue to be a golf course or a park, a nature preserve — some kind of greenspace."(Monson "Vacant Golf Course Stirs Conflict between Neighbors, Owner")

In this same area, the Mizner Trail Golf Course in Palm Beach County Florida is also facing allegations of code violations. Abandoned in 2005, Boca Raton

residents have clashed with owners over the maintenance of the abandoned property. In accordance with county rules, the owners had been mowing the grass at 18 inches. Residents complained and the county changed the requirement to 7 inches. The residents were somewhat appeased, but they say that it does not solve the larger issue of what will become of the old fairways, greens and clubhouse grounds. Landowners want to develop the property for new homes, but residents do not want to lose their greenspace. Residents claim that the landowners purposefully shut down the golf course and allowed the conditions of the property to deteriorate to clear the way for development (Reid).

Across the country in another hard-hit state, the King's Crossing subdivision golf course in Corpus Christi, Texas, shut down in 2009 due to financial problems. It is now overgrown with weeds, and its presence has decreased property values by as estimated 17%. Resident Stacy Richards bought her home while the golf course was still in operation. Now that it has closed, she is trying to sell but worried that the closed golf course across the street from her will deter buyers.

Municipal governments are also affected by the downturn in the golf industry. According to the NGF, most of the golf courses closed were public (NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?"). Arizona, which relies heavily on tourism, has been hit by the downturn. Phoenix Golf has run an annual deficit since fiscal year 1999, and the cumulative deficit from then until fiscal year 2012 was $14.8 million. To break even, according to an article in *The Bond Buyer*, "Phoenix Golf would need revenue growth of 40%, far beyond the anticipated 10% in the next decade." Proposed solutions for dealing with the

operating deficit, including outsourcing maintenance, closing some courses, and converting others to limited-use parks. (Williamson)

Municipal or private, people become attached to their favorite golf courses and are sad to see them go. Jeff Shelley met his future wife at the rural, low-key Tall Chief golf course east of Seattle. Of their first game he writes,

"*...[W]e arrived on the remote stretch of Tall Chief's back nine, five holes that went out and back through towering woodlands above the aforementioned dairy farm. We soon came across a half-dozen fawns, watched by the wary mother in the trees, and a couple of holes later encountered three baby foxes, all having a grand time on this wondrous spring day.*"

On the golf course's closing he writes, "Often-rural, low-key and affordable places to play that serve as such special starting points for beginning golfers are becoming, sadly, relics of our past." (Shelley)

People are also attached to the amenities which developers usually bundled with the golf course and which tend to disappear when the golf course closes. The Colovista Golf Course and Country Club outside of Austin, Texas, closed in 2009. Owners tried for sell the land as a packaged deal for two years, but they were unsuccessful. The owners then attempted to sell the land as separate pieces. This move angered property owners who said the purchased their property because of the golf course and country club, and that selling the land separately would destroy the integrity of the golf course community. The case went to court and the judge ruled that the land could not be sold separately. This was little comfort to homeowner Mark Ripley who says that the once beautiful golf course has grossly deteriorated: “It has been described as

unkempt pasture land," he says. "It has deteriorated quite a ways." Ripley, along with other property owners, feels that "besides losing the amenities, like golf, swimming and a restaurant, the value of his home has dropped by $25-30,000." (Wright)

Private golf communities are dealing with the fallout of the saturated golf course market. Property values for parcels on and around golf courses have dropped dramatically. In 2006, Ronda Fitton and her husband paid $500,000 for a lot at Pronghorn in Bend, Oregon, a gated community with designer golf courses. A similar-size lot sold for $10,000 in early 2012. Ms. Fitton says she is hopeful property values will increase but that the lot is "worth nothing now. (Keates)" In Borrego Springs, California, lots at Rams Hill are also selling for about $10,000, compared with $100,000 at the peak of the real estate boom.

A 2012 article in the *Orange County Register* quotes golfer Tom Kite as speculating on whether the size of golf courses is one of the big problems for the decrease in players. According to Kite, a smaller, shorter golf course not built to pro-golf standards could still be entertaining for amateur players. The article also quotes real-estate agent Mark Boud, who notes that golf courses have fallen out of favor for homebuilders hoping to attract buyers. The articles states that "developers have learned that golf courses are an expensive and narrow way to keep a new housing community green. (Lasner)" Developers have moved to other amenities that will be more useful to the non-golfer majority. "Lakes, walking paths and central amenities are used by all residents, as opposed to only about 15% to 20% of residents" for golfing, Boud says (Lasner).

Supporting this trend is the fact that the premium that potential homebuyers are willing to pay for a house on a golf course versus a house that is not on a course has dropped significantly in many parts of the country (Keates). Real estate agents and industry insiders say that the premiums used to be from 50% to 25% in 2007 and have dropped to between 10% and 25%. Interestingly, in Palm Springs premiums are still as high as 35% (Keates).

To cope with the changing market, some developers such as those of Talis Park are foregoing golf as the main draw and building village centers or other amenities with a broader market appeal (Keates). But what of the golf courses that have already been built?

CHAPTER 5: COURT CASES

The previous chapter showed that closed golf courses directly impact home values. Declining assessments are not the only negative externalities associated with closed golf courses. As owners of closed golf courses seek to develop them and recoup their losses, they inevitably come in conflict with values and expectations of municipalities and surrounding neighborhoods.

CURRENT CASES

Currently there are several instances where the conflict between golf course owners and municipalities has arisen. In Madison County, Georgia, owner John Byram wanted the commission to rezone his property for use as a 55+ retirement community. He cited many reasons for needing the rezoning, but Byram's main argument for needing the up-zoning was economic:

> *"The golf course is something I want to keep...The only way to keep the golf course is allowing an active retirement community be built around it. There's no way I can keep throwing money at it. I'm running out." (Munro)*

After denying his request several times, the county's zoning and planning commission did eventually up-zone his property (Munro "What's on the Horizon with Sunrise?"). Another owner in the Northeast was not as fortunate.

In 2011, the 230-acre Chestnut Ridge Golf Course, (founded in 1957 in Baltimore County, Maryland), closed due to financial troubles. The new owners of the

property had planned to build 85 luxury single-family homes on 1.5-acre lots which would have been allowed in the property's zoning category at the time of purchase (Knezevich). Community organizations rallied to protect the open space from development that would harm the environment and increase traffic (Knezevich). Upon learning of the plan, the County Council unanimously voted to change the zoning to one intended to more strictly conserve natural resources. The developers are currently suing the county for $10 million because they claim a regulatory taking has occurred. The county says that it acted out of a legitimate need to preserve the headwaters of a major waterway and to protect current residents from intense development in the area (Knezevich).

While the Chestnut Ridge example the county is imposing new zoning, in Virginia a closed golf course is being denied an up-zoning request. The 166-acre Reston National Golf Course was built in the early 1970s in Fairfax County, Virginia. The property is between two proposed METRO stations and the owners want to take advantage of the new infrastructure (Jackman). In her article on the Reston National Golf Course, Karen Geoff sums up the situation succinctly:

> *'The property is zoned [Planned Residential Community] and was approved under three rezoning applications in 1971. The Reston Master Plan is part of the Fairfax County Comprehensive Plan under which the golf course is classified as open space.*
>
> *Any alternative development of the property that cannot be construed as open space, golf course or nature center would require an amendment to the Fairfax County Comprehensive Plan.*

> *Any redevelopment of the property to a use other than a golf course would require approval of a development plan amendment (DPA), as well as a PRC Plan approval.*
>
> *Even though a 1993 determination from county officials says that a commercial golf course is permitted in a PRC District otherwise zoned residential, it does not mean the golf course is considered a residential zone." (Goff)*

The neighbors in the area also protested the potential loss of open space (Jackman). The Reston Citizens Association, the Reston Association and the Reston Rescue are fighting the rezoning and are collecting signatures and holding fundraisers (Goff). The Planning and Zoning Commission denied Reston's request to re-zone the property last year. The owners are in the process of appealing to the Board of Zoning Appeals. Should the board deny Reston's request, the property owners will likely claim that a regulatory taking has occurred.

TESTS OF REGULATORY TAKINGS

In the Chestnut Ridge example, the case is more clear-cut because the municipality seeks to impose zoning on a property. The owners in this instance have a stronger argument for a takings claim. In the Reston National Golf Course, however, the issue is not so straightforward. The owner is claiming a regulatory taking has occurred because the municipality denied their request for up-zoning. One's gut reaction would be that because the market for golf courses is so bad that if a municipality denies an owner the opportunity to get any economic use out of the property that of course a taking has occurred. However, some test should be run before conclusively making this claim.

The first test is the Loretto test. This test asks whether landowners are forced to endure a permanent physical occupation on their land. In the instances of golf course rezoning, there is no physical occupation. So there is no taking under Loretto.

The next test is the Lucas test. This test asks whether a regulation deprives a property owner of all economically beneficial use of that property. In *Sanderson v. Town of Candia, 787 A.2d 167 (N.H. 2001),* the Supreme Court of New Hampshire ruled that "the Taking Clause is not designed to be a taxpayer-subsidized insurance policy against bad investments, or good investments that turn bad due to changes in the marketplace (Hoff)." The same argument could be made in the instance of closed golf courses. As shown in the previous section, golf courses are no longer profitable, but this is a failure of the developers to recognize that the market was saturated with golf courses. The Supreme Court of New Hampshire went on to say that "the Takings Clause was never intended to compensate property owners for property rights they never had (Hoff)." In the example of up-zoning a closed golf course, the property was never zoned for residential or high density residential. The owners should not be allowed to claim an amount of economic loss on pure development speculation. Therefore, there is no taking under Lucas.

The third test is Nollan/Dolan. In these two tests, one asks whether there is an essential nexus between a legitimate state interest and a permit condition and whether a requirement is roughly proportional to the impact of a development on the surroundings. Under this test, owners of a closed golf course may have

more of a claim that a regulatory taking has occurred. A municipality telling a property owner that they cannot develop on their property is one issue. If land is preserved as conserved space, there is public benefit and, yes, the property owner has a burden placed on him or her. However, the owner gets some benefit from having conserved open space because he or she and his or her children benefit from the clean air, the flood prevention and wildlife habitat preservation. However, if the municipality requires that not only is the space to remain undeveloped but is also to be publically accessible, then this requirement would fall under a regulatory taking. At that point, the benefit that the owner gets from the undeveloped land is less than the cost he or she pays to allow the public to access the land. So there are potential grounds for a taking under Nollan/Dolan.

The fourth test is the Penn Central balancing test. This test weighs three criteria: 1) the economic impact of the regulation on the claimant, 2) the extent to which the regulation has interfered with distinct investment-backed expectations and 3) the character of the governmental action.

As with Loretto, much of the economic damage is the fault of the market and the fault of the developer for making a bad investment decision. Personal responsibility should have some bearing on the economic impact argument. Mismanaging one's real-estate portfolio should not constitute a taking.

Investment-backed expectations in redevelopment have the potential to be overconfident. In the balance test, the court expects these expectations to be reasonable, but proving that a prediction of economic reward is valid is difficult

to do and even more difficult to get a court to seriously consider. In *Andrus v. Allard* 444 U.S. 51 (1979), the U.S. Supreme Court said, "Prediction of profitability is essentially a matter of reasoned speculation that courts are not especially competent to perform. Further, perhaps because of its very uncertainty, the interest in anticipated gains has traditionally been viewed as less compelling than other property-related interests." In the situation of a closed golf course, many developers and owners make investment decisions on the golf course zoned as residential or mixed use. However, if the closed golf course is zoned as open space, then investment-backed expectations can only rationally be made on this zoned use.

A municipality acting on behalf of its citizens has a right to make and enforce a comprehensive plan. The golf course owners and developers had no qualms with the comprehensive plan when the market was good and houses on golf courses were selling. As soon as the market went sour and people stopped spending money on luxury hobbies, owners and developers suddenly claimed that any failure to change the zoning constitutes a taking.

In instances where the municipality does not have a comprehensive plan in place (which really would only be areas that are more rural), the Penn Central test would lean more towards the developer because any rejection of an up-zoning request would be arbitrary and capricious. However, most areas in or near a metropolitan area will be under some form of a comprehensive plan as such plans are usually required for some types of federal transportation dollars.

The character of government action in denying an up-zoning request is neither arbitrary nor capricious in instances where there is a preexisting comprehensive plan in place. Because the Penn Central test tends to favor a municipality more heavily anyways, under the Penn Central test such an action would be ruled not a taking.

WENSMANN VS. CITY OF EAGAN

When faced with a similar case of a refusal to up-zone a closed golf course, the Minnesota court system bounced back and forth on the takings question.

In the 2007 case between the City of Eagan and developer Wensmann Reality, the Minnesota Supreme Court ruled it not a taking. The 120-acre Carriage Hills golf course was zoned as park space "P" and in the comprehensive plan was designated as a component of the city's recreational and park system. The owners, Rahn Family LP, operated the Carriage Hills golf course from 1999 until 2004. Wensmann had a purchase agreement with the current owners that was contingent upon the up-zoning of the property. The City denied Wensmann's request to allow for residential development on the property.

In this case the landowner requested a writ of mandamus to compel an amendment to the City of Eagan's comprehensive plan AND inverse condemnation claim that failure to amend the Comprehensive Plan was a regulatory taking (Wensmann). Their lawyers argued that the "purpose of the Takings Clause is to ensure that the government does not require some people alone to bear public burdens which, in all fairness and justice, should be borne to the public as a whole (Wensmann)."

The district court ruled in favor of the developer but the Court of Appeals ruled in favor of the City if Eagan. The Minnesota Supreme Court ultimately refused to come down on one side or the other. It did, however, definitively state that an owner who purchases land with knowledge of zoning restriction is NOT prohibited from later making a regulatory taking claim. With response to the takings issue, they applied the Penn Central balancing test and found that the scale was tipped in favor of the developer. Because of the economic realities, the court said that the City's decision might have left no other reasonable, economically viable use of the property, but they did not have enough information to make a definitive statement either way (Wensmann). The court also said that the existing Comprehensive Plan and preserving open space were valid reason to refuse to amend that plan, but that this refusal could be seen as a taking. In the balancing test, the court found that the character factor favored the property owner:

> *"This is not a situation where numerous property owners are subject to the same kind of land use restrictions, and a single property owner is asking the city to allow a new, different use. Instead, it appears that only a few private property owners in the city are subject to the "Parks, Open Space and Recreation" land use designation. The land use designation is extremely restrictive, and seems aimed at things that have been considered governmental functions." (Wensmann)*

The Court refused to rule on whether or not there was a taking and instead sent it back to the trial courts to decide. The Court made this decision because of the "factual dispute as to whether continued use of the property as a golf course is reasonable and whether holding or selling the property for investment purposes is a reasonable use (Wensmann)."

Because this ruling occurred in 2007 before the real estate market crashed, a case brought before a higher court today may have a better chance of claiming that current zoning leaves no reasonable economic use of the property.

However, much depends on the particulars of a case. For example, if the golf course parcels were previously zoned open space, the municipality may have more cause to deny a permit. It the municipality changes the zoning, or the land has no zoning designation, the municipality may lose a lawsuit. Owners, municipalities and residents cannot count on a court to rule in their favor.

CHAPTER 6: PROBLEMS

The literature review discusses the multitude empirical evidence of the problems caused by closed golf courses. These problems encompass overgrowth, vandalism, arson, illegal dumping and emotional distress for neighboring property owners. Several sources emphasized declines in property values. While all of these problems are important, property values are the easiest to measure and most directly impact a family's equity status.

Property value is a good indicator of effects of a closed golf course because county and city appraisers factor in market value into the appraisal. If a closed golf course has a negative effect on a neighborhood, it will be reflected in a property's market value.

The objective therefore is to do a somewhat cursory analysis on whether or not a closed golf course causes decreased property values and, if so, by how much.

In SPSS, this author ran a multivariate linear regression model with data from three of the states that lost the most courses in the last bust cycle. The states are Texas, Florida and Georgia. The golf courses compared are in Table 1 below. All property values were acquired from their respective county property appraiser's websites. The sites were chosen so that within each state, the pairs of golf courses were in similar areas with similar access to jobs and to transportation.

Table 1: Courses Used in Regression Analysis

State	Municipality	Open Golf Course	Closed Golf Course
Texas	City of Bastrop	Pine Forest Golf Club 30.066801, -97.292671	Colovista 30.054864, -97.26199 Closed 2009, (reopened fall 2013 but data from 2012)
Georgia	DeKalb County	Mystery Valley Golf Course 33.761578, -84.138004	Hidden Hills Golf Course 33.742042, -84.182446 Closed 2005
Florida	City of Pensacola	Marcus Pointe Golf Course 30.475178, -87.27754	Carriage Hills Golf Club 30.456535, -87.284276 Closed 2008

There are 368 entries being compared. All the properties share a parcel boundary with golf course land. The maximum and minimum percent changes in prices are 41.30% and 70.94% respectively (Table 2). The mean percent change is -19.5%. The 2012 values of the properties range from $55,102 to $576,803 (Table 2). The mean 2012 value of the properties is $186,081 (Table 2).

Table 2: Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
2012_VALUE	368	521,701.00	55,102.00	576,803.00	186,081.0625	69,825.74242
BEFORE_VALUE	368	630,796.00	41,600.00	672,396.00	171,809.5027	97,303.32743
SF	368	3,710	1,092	4,802	2,282.82	505.886
%_CHANGE	368	112.24%	-70.94%	41.30%	-19.5074%	23.83914%
AGE	368	37	5	42	17.28	8.191
dollar_change	368	305,280.00	-153,280.00	152,000.00	14,551.1005	53,646.89081
Valid N (listwise)	368					

The dependent variable is percent home value lost from before both the housing bubble burst AND the golf course closed. Therefore, effects of the recession on property values can be controlled for. For the independent variables, the "closed" status of the golf course is coded as a dummy variable. Square footage and age of house are also independent variables with states Florida and Texas coded as dummy variables.

For this model, the R-square value is 0.696 (Table 3), indicating high correlation in the model. An R-square value of 0.696 means the 69.6% of the variance in the percent change in price can be explained by the variation in the independent variables. All independent variables are significant because their p-values are smaller than 0.05 (Table 4).

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834[a]	.696	.691	13.24349%

a. Predictors: (Constant), FL, CLOSED, SF, AGE, TX

What the model found is that all other things being equal, a home in Georgia next to the Mystery Valley Golf Course loses 55.1% of its value from the price before the recession compared to a home bordering the closed Hidden Hills Golf Course which loses 66.8% of its value. A Texas home next to the Pine Forest Golf Course loses 9.2% of its value versus a home on the closed Colovista Golf Course

which loses 20.9% of its value. A home in Florida next to the Marcus Pointe Golf Course loses 15.8% of its value compared to a home on the closed Carriage Hills Golf Course which loses 27.5% of its value.

Age of the home is significant. As a house increases a year in age, its value increases by 0.31%. The size of the house is also significant. As a house increases one square foot, the value increases by 0.003%.

In summary, controlling for other factors, a closed golf course decreases property values 11.7 % on average. We can accept this value as statistically significant since the significance level is .000 (table 4). So, a $150,000 house on an open golf course will only be valued at $132,390 if bordering a closed golf course. That is a $17,610 loss of value.

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-55.130	4.363		-12.636	.000		
	CLOSED	-11.747	1.398	-.247	-8.403	.000	.976	1.025
	AGE	.315	.096	.108	3.284	.001	.776	1.288
	SF	.003	.001	.070	2.353	.019	.950	1.053
	TX	45.875	1.867	.914	24.568	.000	.607	1.647
	FL	39.317	1.867	.774	21.058	.000	.622	1.607

a. Dependent Variable: %_CHANGE

The correlation matrix (Table 5) shows that there is a low, negative correlation between percent change and the closed status of a golf course with a coefficient of 0.299. This number means there is some relationship between the two variables but it is weak. A number indicating high correlation would be 0.7 or above.

Table 5: Correlations

		%_CHANGE	CLOSED	AGE	SF	TX	FL
Pearson Correlation	%_CHANGE	1.000	-.229	-.295	-.077	.493	.291
	CLOSED	-.229	1.000	.117	.066	.000	.000
	AGE	-.295	.117	1.000	-.067	-.224	-.213
	SF	-.077	.066	-.067	1.000	-.122	-.016
	TX	.493	.000	-.224	-.122	1.000	-.502
	FL	.291	.000	-.213	-.016	-.502	1.000
Sig. (1-tailed)	%_CHANGE	.	.000	.000	.070	.000	.000
	CLOSED	.000	.	.012	.104	.500	.500
	AGE	.000	.012	.	.101	.000	.000
	SF	.070	.104	.101	.	.010	.382
	TX	.000	.500	.000	.010	.	.000
	FL	.000	.500	.000	.382	.000	.
N	%_CHANGE	368	368	368	368	368	368
	CLOSED	368	368	368	368	368	368
	AGE	368	368	368	368	368	368
	SF	368	368	368	368	368	368
	TX	368	368	368	368	368	368
	FL	368	368	368	368	368	368

The model has problems with non-random sampling. A more robust model would have before and after values for random properties on open and closed golf courses across the U.S. However, this model is useful to give an idea of how closed golf courses affect fairly similar neighborhoods, in similar locations, with similar school districts and similar job access, in three states that have high numbers of closed golf courses.

The 11.7 % number is important for policy makers and for community members. It gives a good starting point for convincing people why golf course retrofits are necessary and how they can directly benefit property owners and stakeholders.

CHAPTER 7: PART I CONCLUSION

Closed golf courses have been a problem since the golf industry went bust in 2006. There are an estimated 2,400 closed courses in America. With each course averaging 190 acres, there are 480,000 acres of vacant land. The majority of closures are clustered around major metropolitan areas and through the Sunbelt.

There are big problems associated with having a closed or abandoned golf course in an area. These problems include declining real estate values of surrounding houses, code violations, arson, overgrowth and trespassing. If a developer or owner wants to redevelop a golf course, they many times face neighborhood resistance and regulatory issues.

Original analysis of property assessor data concludes that a closed golf course decreases single-family home values by 11.7%.

In many instances, people do not think there is anything wrong with the golf industry, even if they do not play golf. Golf has a perception that it is a wealthy white man's game. People tend to assume that somewhere a rich person plays golf and that keeps the exclusive industry afloat. The metrics for number of players and the NGF's projected demand for golf in the coming decade belie these beliefs. While the golf industry goes through its soul-searching to figure out how to make the game attractive to women, minorities and millennials, communities must face the problem of what to do with a closed golf course in their vicinity.

There may also be opportunities for both groups to work together to increase demand for golf in conjunction with transforming a closed course.

PART II: STRATEGIES

CHAPTER 8: PART II INTRODUCTION

Part I introduced many problems associated with having a closed golf course in an area and many difficulties faced by developers, community members and municipalities when attempts are made to redevelop a closed course. The next part of this paper will show some of the steps that have been taken to repurpose, redevelop or retrofit a closed golf course. Transformations of closed golf courses have been led by communities, developers and municipalities. Methods range from parks to farms to aging-in-place communities.

Part II discusses how to deal with these problems and how to retrofit closed golf courses. Chapter 9 is a literature review that discusses current efforts to re-purpose, redevelop and retrofit closed golf courses. Chapter 10 defines the morphological conditions of golf courses and the areas that surround them. Chapter 11 goes through nine cases studies of different types of golf courses, explains the implications of surrounding morphological context, ecological externalities and regional conditions and market condition on developing closed golf courses. This chapter also presents and explains proposed subdivision plans for each cases study. Chapter 12 is an in-depth case study of design and policy recommendations for the Hidden Hills Golf Course. Chapter 13 details the policy implications of retrofitting a closed golf course and how development would affect any surrounding residential properties.

CHAPTER 9: LITERATURE REVIEW

This literature review discusses strategies and examples of dealing with closed or abandoned golf course. The types of cases explored in the literature review fall into one of the following categories: Re-purposing, Redeveloping or Retrofitting. The cases studied in the second half of this thesis will deal mostly with retrofitting, but it is important to have a base knowledge of the other two methods of dealing with closed or abandoned golf courses. For clarity, this paper defines the three methods as follows:

- **Re-purpose:** keep the golf course form mostly the same but use alternative uses. Example: keeping it as parkland.
- **Redevelop:** Bulldozer clear the golf course and you build something completely new. Ex: flattening the golf course, running streets through it and building a mixed use development.
- **Retrofit:** Add to the golf course still keeping the original use, just adding on to it. Ex: turning an 18-hole into a 9-hole and using the extra land for park and/or housing

How to Treat Closed and Abandoned Golf Courses

I. Re-purposing and Redeveloping

Most instances of reusing a closed or abandoned golf courses is re-purposing it as a park, trails or greenspace or re-developing it as residential or industrial use or, in one example, a cemetery. Sometimes a private golf course is taken over by a municipality or by residents. The following instances highlight occurrences of re-purposing or redevelopment.

Colwood National Golf Club in Portland Oregon is a struggling 1929 golf course. With the help of the Trust for Public Land, the owner, Bill Saunders Jr., is in the process of getting the zoning changed. The new zoning would allow for some of the golf course land to be used for industrial and manufacturing and the rest conserved as park land. The Trust for Public Land normally helps protect and increase open space in and around cities. It is abnormal for the organization to assist in this type of partial rezoning. Because this partial rezoning will increase the amount of shovel-ready industrial land in Portland, increase publicly accessible open space and restore natural habitats, there is multilateral support. The Portland Business Alliance hopes that this land use compromise can be a template for other golf courses in Portland (Tims).

Sumner Meadows Golf Links, a public golf course in Washington State, opened in the mid-1990s. Because of low numbers of players and the harsh economic climate, the city has had trouble making enough money on the course to pay of its debts. Sumner City still owes about $5.77 million for the land and construction. It has been subsidizing the golf course but can no longer afford to do so.

Recently, the City Council voted to allow the mayor to market the golf course for sale. Of the 280 acres on and around the course, 172 acres are considered developable. Selling around 75% of this land could yield $35 million, according to city officials. The land would most likely be developed if sold (Schilling).

In Tucson, Arizona, parks director Fred Gray has been contemplating the idea of turning the city's struggling golf courses into "passive parks." These greenspaces would be turned over to nature and be given little to no maintenance. While former golf cart paths could be used for biking or hiking, a passive park would not have traditional amenities such as a playgrounds, pools and athletic fields (DaRonco).

In *Fairways under Fire*, the authors discuss struggling municipal golf courses. In many cities, there is a dearth of greenspace, and golf courses, which only serve a narrow user group, are viewed as a way to increase greenspace (Harnik and Donahue 42-46). The article cites design strategies similar to those stated above, such as putting in trails, dog parks, or eco-zones. While municipal golf courses are struggling and closing all over the country, this problem is somewhat easier when compared to what to do with private golf courses in suburban neighborhoods. The course is usually one self-contained parcel and, because it is in an urban area, it is close to amenities like transit, retail and entertainment. If the city does not need or want any more parkland, it can subdivide the land and sell it or develop it themselves.

In Union County, New Jersey, the county Parks Department shut down the municipally owned Oak Ridge Golf Course in 2009. The county turned the 67 acres into a public park for biking and walking and created an archery range.

Converting the course to park land was good for the environment because it significantly cut down the amount of water and pesticides used. The decision also saved the county $5 million in improvements it would have had to make to upgrade the golf course. In North Las Vegas, Nevada, the municipality is converting the Craig Ranch golf course into a 135 acre park with a playground, dog run, picnic grounds and trails (Buntin).

Some communities want to have greenspace, but still have a more structured use. In December 2011 in Appleton, Wisconsin, the Community Outreach Temporary Services purchased the 77-acre Riverview Country Club for $2.6 million in order to re-develop it as a community garden. This new use was projected to host outdoor gardens, orchards and greenhouses and was estimated to produce 50-100 jobs (Daly). As of June, 2013, the former golf course has 25 acres dedicated for intensive food production with 45 acres for supportive food production functions(Cassidy).

While some sort of green use is popular with residents who live in golf course communities, land owners typically want more return on their land. A story on NPR discussed repurposing closed golf courses in Florida. In Royal Palm Beach the town is turning the 160 acre Traditions golf course into parkland. The plan costs $22 million and will include kayaking, volleyball, a driving range, playgrounds, and a great lawn for concerts. In the nearby town of Deerfield Beach, one closed golf course will be repurposed as a cemetery, with some land set aside for park space.

In Chapin, South Carolina, at the Timberlake Country Club, 300 residents have banded together to purchase a struggling golf course to prevent it from closing.

One caveat of the deal was that the residents had to do the majority of the maintenance themselves. Resident Michael Kletter did not envision spending his retirement doing unpaid manual labor. He says, however that "the recession changed everything. The golf course was in danger of closing. It's not a golf community without a golf course. We had to do something." The trend of residents bailing out failing golf courses is emerging in the US. In wealthy neighborhoods, 10-20 people will often write checks to save the course. In more modest neighborhoods like Timberlake, hundreds of residents contribute a few thousand dollars to buy the course. In Timberlake, residents contributed $4,700 each, but in reality these residents have often contributed much more than that in time and labor. Timberlake residents also perform administrative tasks as well as maintenance. Having a hands-on relationship with the course has contributed to a greater sense of ownership and pride in the golf course. Residents will often band together in small groups to adopt a hole near their homes and keep it trash-free, clipped and planted. Not all resident-owned golf courses have been success stories; there are dozens of failed takeovers all over the country (Pennington).

A rarer form of salvation for struggling golf courses is reconfiguring a private, high-end course as a municipal golf course. In the town of Davie, a city near Ft. Lauderdale, Florida, the long-closed Arrowhead Golf Course is reopening as a municipal course. Such a move works well in Davie because while the town has an abundance of parks, it does not have an affordable golf courses for students or local, according to Councilman Bryan Caletka (Montagne).

An article in *Land Think* specifically talks about repurposing urban golf courses. The author asks that cities not default to developing closed golf courses as suburban style-neighborhoods. He cites several statistics highlighting the dearth of usable open space in urban areas and mentions repurposing golf courses into park land as a way to help remedy this problem. Downey mentions the standard park uses such as sledding, event space, walking/hiking/biking trails, and playgrounds. Going a step further, Downey brainstorms ways that repurposed golf courses could be economic drivers for communities. He brings up the ubiquitous idea of urban-farming, but also mentions more realistic options such as municipal composting and localized storm water treatment (Downey). In cities with aging sewer systems, such a move could save millions of dollars a year. Sharp Park, in San Mateo County, located in the San Francisco Bay area, is a struggling 18-hole golf course on a 417-acre parcel of land. The golf course, subsidized $300,000 per year by San Mateo County taxpayers, is plagued by "crumbling infrastructure and annual flooding problems" and is in need of "significant financial investment," according to the *San Francisco Chronicle*. Complicating matters, the land is environmentally sensitive and home to the California red frog and the San Francisco garter snake, two endangered species. Rebuilding the golf course to be in compliance with the Endangered Species Act would cost millions, so the author proposes converting Sharp Park into a nature conservancy and handing the reigns over to the National Park Service (Desai).

The Ridgeline golf course in Orange California is a closed 9-hole golf course which is taking a more traditional route of retrofitting. Developers are moving

forward with a 39- home equestrian-themed residential neighborhood. The development will include horse trails, a horse arena, and will have 34 of the one-acre lots contain horse barns (Shyong).

II. RETROFITTING

Repurposing or redeveloping a closed or abandoned golf course has already been going on around America. But what if a community still wants to have some opportunities to golf but would also like some redevelopment and usable greenspace? There needs to be a hybrid solution—a retrofit option—for rethinking closed and abandoned golf courses.

In "Code Blue" Hueber outlines the reasons why the golf course model of the '90s and early 2000s failed. The main focus of the paper is to convince the golf industry that change is the only hope of survival:

> *"The real estate developers' business model for developing difficult and expensive golf courses required a financial subsidy that is no longer available in today's economic environment. It is likely that there will be increasing pressure on golf courses to cut costs, particularly, golf course maintenance costs because this is the highest expense category for all golf courses. There will be a change in what American golf courses will look like and how they will play, because golf courses cannot afford to spend as much as has been spent in the past to maintain the previous high standard of golf course maintenance. (Hueber and Worzala 27) "*

After a thorough and convincing argument on the entrenched problems facing the industry, Hueber gives a weaker argument on methods to save golf courses and the golf industry. Falling back on a buzzword of the mid 2000s, he cites sustainability: economic, environmental and social.

On environmental sustainability, his focus is narrowed to materials and maintenance of golf courses. It is also too broad. Hueber gives a stock answer about environmental sustainability, but gives little specifics:

> *"Sustainable golf courses strive to be one with nature and cause no lasting environmental harm, which includes taking no more from nature than what is needed and that can be replenished, and by fostering biodiversity and supporting wildlife habitat with golf course maintenance 'best practices' that minimize the use of irrigation, fertilizers, pesticides and other chemicals (Hueber and Worzala 24)."*

Hueber spends several paragraphs on advances in turf grass but tells potential golf course re-designers to think outside of the "wall-to-wall green" box. Eric Larsen, president of Arnold Palmer Golf Course Design and the 2010 president of the American Society of Golf Course Architects, said that

> *"Golf course sustainability means a great deal more than having brownish grass. There will be a great need for architects to be innovative in the redesign of these golf courses with the intention of making them easier to play and less costly to maintain (Hueber and Worzala 28)."*

Hueber astutely notes, however, that while sustainability organizations have concentrated on new golf courses being more sustainable, they have not concentrated on retrofitting older courses.

On economic and social sustainability, Hueber mainly discusses new marketing strategies. One notable point (one that people such as Jane Hickie also frequently cite) is that of the average golfer versus the pro golfer:

> *"Amateur golfers will likely prefer the firmer playing conditions characteristic of sustainable golf course maintenance, particularly where fairways are shortened. Most golfers are not*

> *able to hit the high shots currently needed to get on many of the greens found on the courses developed in the last 20 years. Average golfers tend to hit the ball lower and rely upon the bounce and roll of the ball to reach the greens (Hueber and Worzala 27).*"

Opportunities for a win-win situation for golf course retrofits and the salvaging of the golf industry abound. Hueber gives ways to save golf courses specifically, but not the surrounding neighborhoods affected by closed courses. Hickie will later expound on retrofits that keep a shortened golf course and use the extra land for park space and real estate development.

In her 2009 book (and 2011 updated edition), *Retrofitting Suburbia*, Ellen Dunham-Jones and June Williamson started the conversation on the need to re-think suburban living. The book uses a series of case studies to highlight the authors' thesis that instead of just accepting the auto-centric status quo, urban designers can work to make suburban spaces more human relevant. One of the main drivers for the need to retrofit suburbia is the changing demographics in suburban areas. In our collective conscious, society still view suburbia through a 1950s lense: white, upper-middle class people with children. This picture no longer holds true. Suburbs today are more elderly, poorer, and browner than they have ever been (Morello). Therefore, the authors assert, the policies and design principles applied to suburbs today must adapt to the new reality.
The strategies *Retrofitting Suburbia* highlights can be broken into three categories: Re-inhabitation, Redevelopment, and Re-greening. While the case studies highlighted by the book do not include any golf courses, some of the strategies these case studies rely on can be applied to retrofitting golf courses. Provide environmental repair, revise zoning codes and public use standards,

improve connectivity for drivers, cyclists and pedestrians, diversify housing choice and size, add new units to existing subdivisions, and invest in quality architecture are all strategies from *Retrofitting Suburbia* that can be applied to golf courses. There are many good lessons to be learned from the case studies, and chief among them is financial. Retrofits cost a lot of money, so creative financial solutions are a must for success (Dunham-Jones). Another key lesson tangentially related to finances is that the retrofit should provide services and amenities to the community and add character to an area or else the retrofit will be dead in twenty years (Dunham-Jones). The retrofit should also provide spaces in which community members enjoy spending time and that allow for interaction. This type of "third space" helps with the longevity of the project and is also good design practice (Dunham-Jones).

Building off of *Retrofitting Suburbia*, and her book on aging in place, *Independent for Life*, Jane Hickie addresses golf course retrofits. In *Independent for Life*, Hickie discusses strategies for making suburban living more amenable to aging in place. A few years later, she wrote an article with two real estate developers titled "Aging on a Different Course." Citing research that seniors prefer to age in place, Hickie et al. suggests that golf courses can help achieve this goal.

> *"Reconfiguring golf courses to reduce their length and make them easier to play, less expensive to maintain, and more environmentally sustainable can create opportunities for infill development of village centers. A village center infill development could include a variety of uses. All could be accessible by walking, golf carts, transit, and/or automobiles. Senior-accessible housing could be clustered around the clubhouse with apartments with elevators or low-rise bungalows. A new village center would provide a nearby*

> *place to move as age dictates and also benefit community economics by increasing the numbers of residents to share in assessments, taxes, and dues. (Hickie)*"

In her article, Hickie briefly discusses retrofit projects like the Deltona Club in Florida which took 17 acres from the existing golf course and built 300 age-restricted condos. The formerly struggling golf course is now profitable.

In another article on dc.streetblogs.org, Hickie builds on these ideas about golf courses and senior housing, and discusses how to make such retrofits financially sustainable. Bringing retail, dining, office space, and other recreational opportunities to golf courses can help offset the cost of golf course maintenance. These amenities would attract a different demographic which could sustain a high-density town center. The article also mentions that this new arrangement would promote a more active lifestyle off the golf course as well as on. Because these amenities take up golf-course land, the course would shrink, making it feasible for seniors to walk from one hole to another. Currently, seniors use golf carts when they play because courses are so vast and games take many hours (Snyder).

This literature review has discussed the anecdotal evidence of problems caused by closed golf courses. In the following chapter, the research will attempt to nail down the exact outcome of having a closed golf course in a neighborhood. The literature review also explored the new idea of retrofitting suburbia, started by Ellen Dunham-Jones, and the ideas of Jane Hickie that golf course retrofits can be key players in allowing the baby boom generation to age in place. Where Dunham-Jones did not explore policy and design strategies to retrofitting a suburban golf course, this research will attempt to do so. Where Hickie gives a

cursory look at retrofitting for the aging populations but does not give concrete outcomes and visualizations, this research will attempt to do so as well.

It cannot assume that every closed golf course will become an aging in place golf community or a community center. Each golf course retrofit must be tailored to the course morphology, the immediate surroundings and the regional area context.

CHAPTER 10: TYPOLOGIES

Golf courses can be divided into three distinct morphologies: Core, double-fairway, shoestring I and shoestring II.

Core golf course (Figure 7) morphological types tend to be in urban areas and tend to be publicly-owned, municipal courses. These compact courses cut down on land and maintenance costs. They are also usually surrounded by public streets or public space.

Double-fairway golf course (Figure 8) morphologies are usually in residential or resort areas. Land is relatively expensive, but the residential units are either more dense or cost millions of dollars, such as in resort areas. Therefore the golf course does not need to accommodate as much residential development to help offset the construction cost. Double-fairway golf courses tend to abut private space or communal space

Shoestring I (Figure 9) golf course morphologies are usually in suburban or rural areas. The course is usually privately owned. Land is relatively cheap; however, the developer still needs to build many units with course-frontage properties in order to help offset the cost of construction. The course designs attempt to maximize the number of properties abutting the golf course. The golf course will usually abut undeveloped land or private space

Shoestring II (Figure 10) golf course morphologies are very similar to shoestring I, only they are extremely spread out (usually due to cheaper land acquisition costs) to maximize frontage and do not have instances of excessive bunching of fairways.

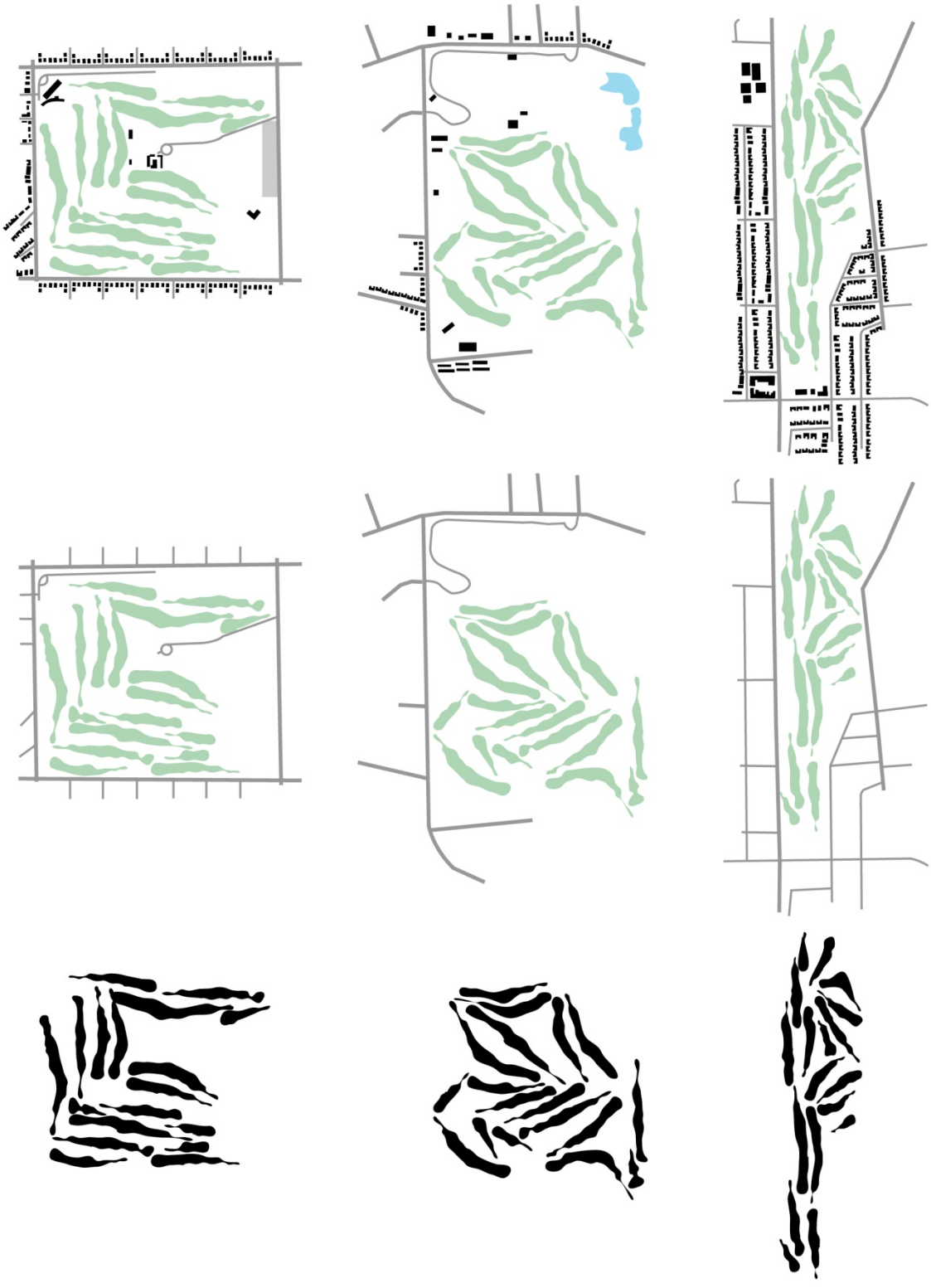


Figure 7: Core Golf Courses

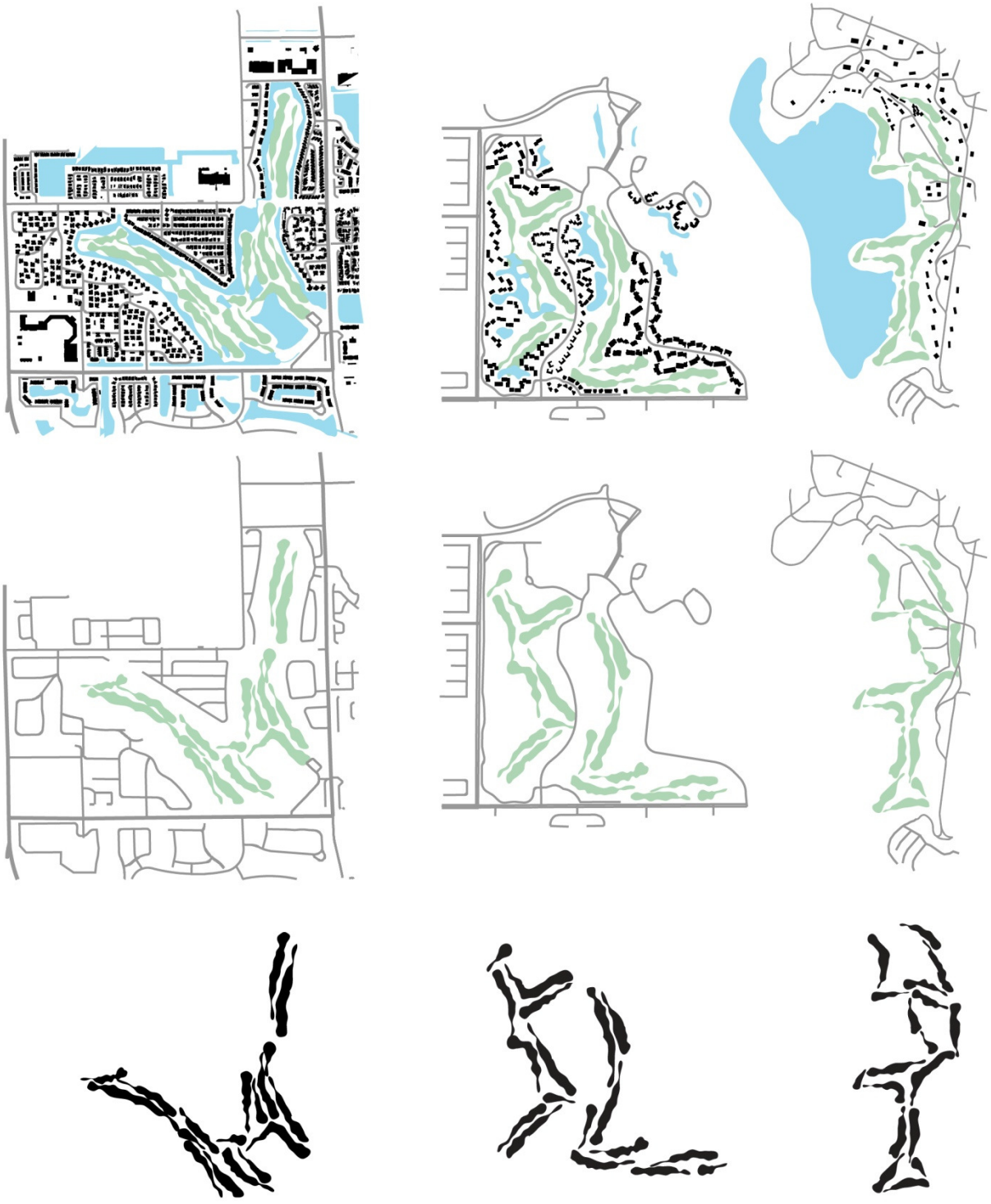


Figure 8: Double-Fairways Golf Courses

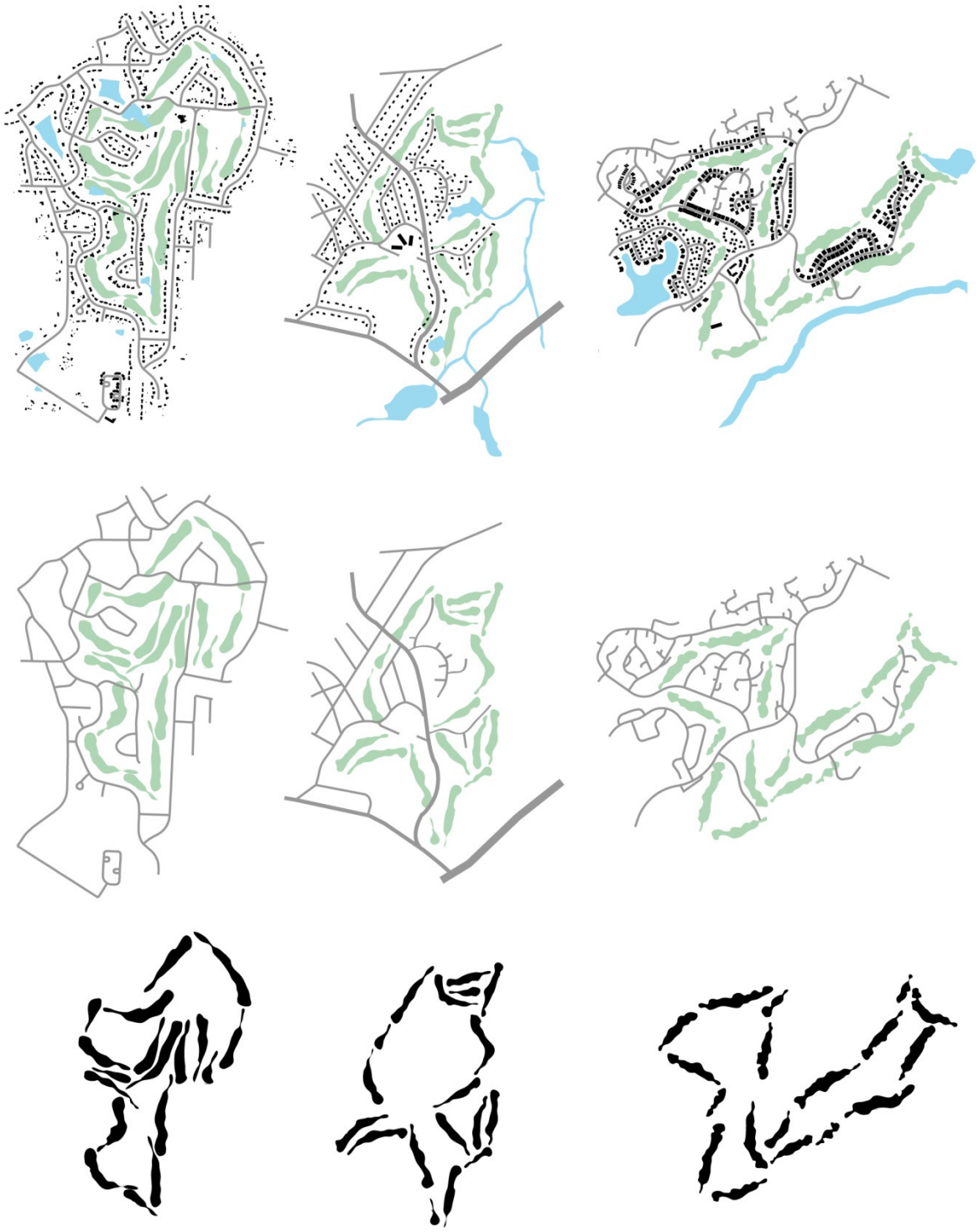


Figure 9: Shoestring I Golf Courses

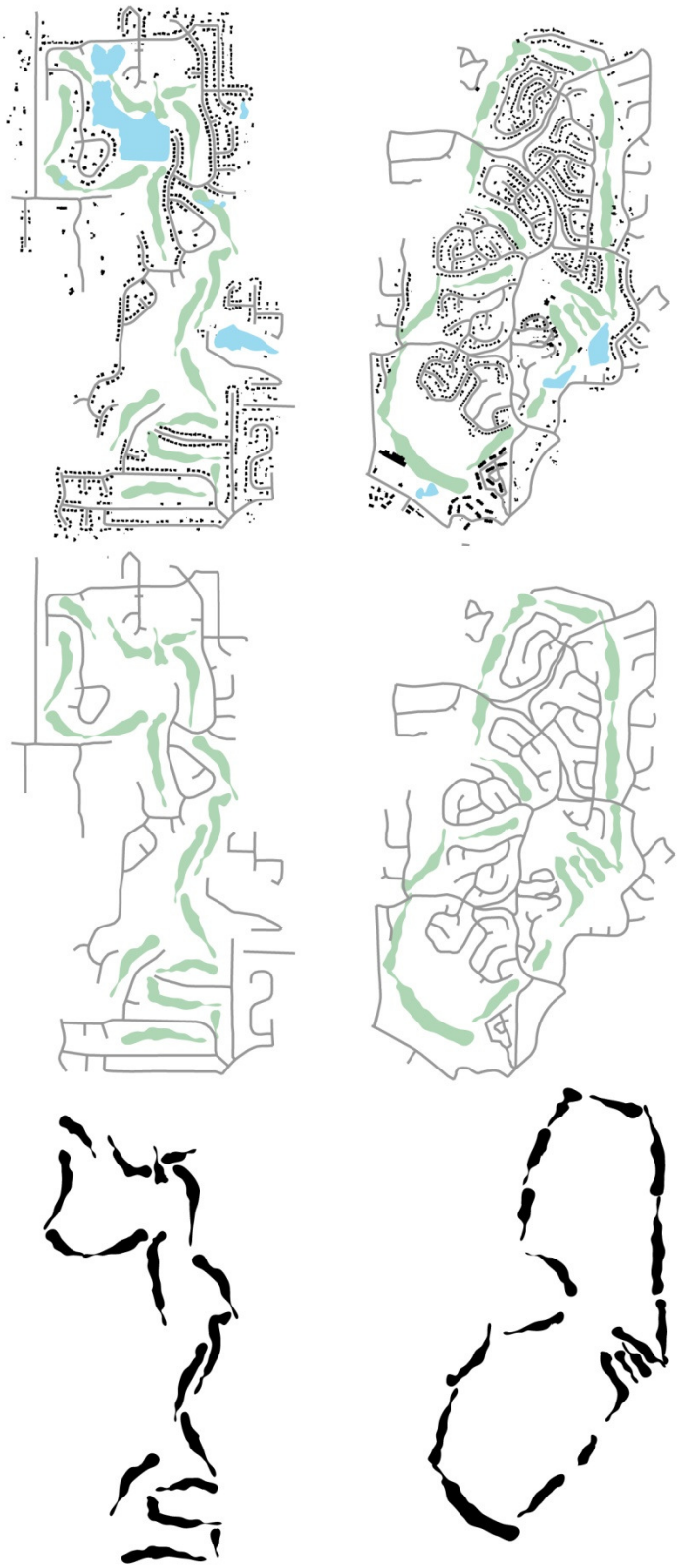


Figure 10: Shoestring II Golf Courses

To understand from a design standpoint how best to retrofit closed golf courses, especially those located in suburban areas, one must understand surrounding context. For this purpose, Brenda Sheer's article "Anatomy of Sprawl" provides an excellent roadmap. Scheer builds off of the urban tissues studies by Philippe Panerai et al. in the book *Urban Forms: The Death and Life of the Urban Block*. Panerai et al. divides the city into three different tissues: roads, subdivisions and buildings. The authors state that these tissues as applied to cities are "the superimposition of several structures acting at different scales, but which appears as a system with linkages in each part of the city. (Panerai 158)" While blocks, lots and streets are all planned together, the building types and uses are not and are therefore allowed and encouraged to change while blocks streets and lots remain relatively stationary (Panerai 158-159).

Urban tissues (Figure 11) are also called resilient tissues, which is the term that this typological analysis will use (Word 11).

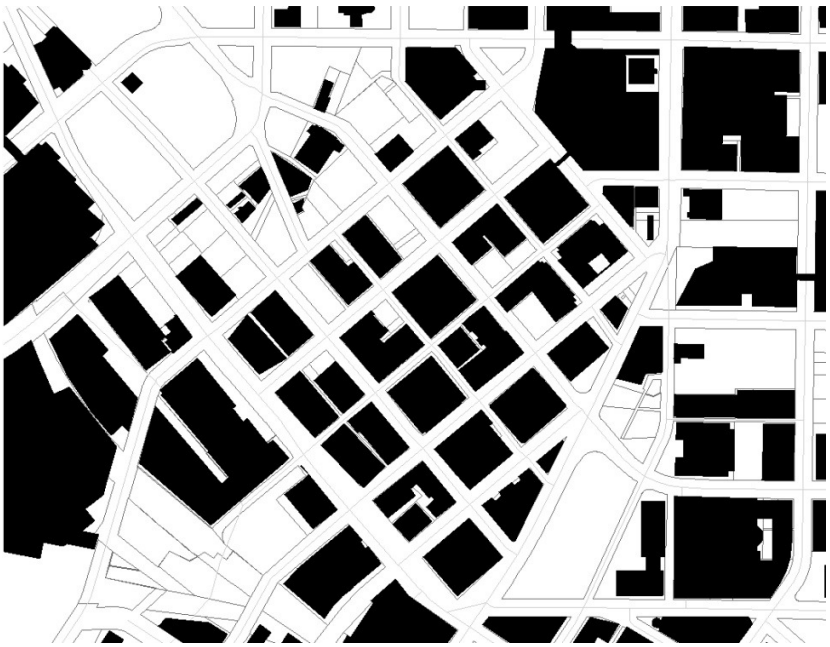


Figure 11: Resilient Tissue

This urban notion of tissues provides the game board upon which all urban action takes place (Scheer 29). Scheer asserts that this basic model of tissues does not work well in suburban areas because the building-lot-street relationship is weaker than in urban areas(Scheer 29).

Scheer categorizes suburban tissues into three distinct types: static, campus and elastic. Static tissue (Figure 12) is most resistant to change of the three types(Scheer 34). It is similar to resilient tissues in that the lots and streets were planned together. However, unlike resilient tissues, static tissue was designed to carry a specific building type and use, and thus, is resistant to transformation of building types(Scheer 34). The ubiquitous planned single-family residential communities are examples of static tissues (33-34).

Figure 12: Static Tissue

A campus tissue (Figure 13) is a large tract of land with multiple buildings on it. According to Scheer, examples include hospitals, apartment complexes, industrial parks and office parks (34). The defining characteristic of this type of tissue is that when new buildings are added, the lot is not subdivided. Campus tissues also have a private system of roads and/or paths connecting the buildings(Scheer 34). Campus tissues have only minimal connections to public street networks.

Figure 13: Campus Tissue

Elastic tissues have the most rapid change rate of the tissues, according to Scheer (34). They have varied lot sizes and a lack of street networks (34). Scheer says that they pose a great many problems since they are "structurally disordered" (Scheer 36). Development depends on a solitary arterial road, which leads to large amounts of traffic congestion.

Figure 14: Elastic Tissue

Gated communities do not readily fit into any of Sheer's tissue categories. This is an issue with retrofitting golf courses because many closed golf courses abut gated residential communities. For the purposes of this research, gated communities will be categorized as campus tissues. Though there are multiple lots with many owners, gated communities have a private network of streets owned collectively or by an umbrella organization. Therefore these areas behave like campus tissues.

These definitions of resilient, static, campus and elastic tissues give a good reference point for retrofitting closed and abandoned golf courses. In the retrofits, the designer is essentially trying to convert a campus tissue to a resilient tissue. The next section will explore ways to structure this retrofit based off of the golf course typology and the surrounding tissues of a particular case.

CHAPTER 11: CASE STUDIES

To comprehensively understand strategies of retrofitting a closed golf course, this author analyzed a closed golf course from each morphological type that corresponds with each tissue type (Table 6, Figure 15). The result is a matrix of closed golf courses, based off of type of course and surrounding context, that can begin to illustrate the steps to retrofitting (Figure 16).

Each case was analyzed in terms of surrounding morphology, access, floodplain, slope, and place in the watershed. (Full analysis sets are available in the appendix.)

The analysis yields three conclusions:

1. Due to surrounding tissue morphology and the morphology of the golf course itself, development of the golf course will be easy or difficult.
2. Because in many cases golf courses were located in environmentally sensitive areas to begin with, these issues produce a continuing impediment and external constraints to golf course retrofits.
3. The regional and market context will largely inform development choices.

Table 6: Case Studies Locations

	NAME	TYPE	TISSUE
1	Lakeview Country Club	Core	Resilient
2	Fort Mcpherson Golf Course	Core	Campus/Elastic
3	Rolling Knolls Country Club	Core	Static
4	Spring Hill Golf and Country Club	Double Fairway	Resilient
5	Raintree Golf Resort	Double Fairway	Campus/Elastic
6	Elkhorn Country Club	Double Fairway	Static
7	Whitewater Country Club	Shoestring	Resilient
8	Pike Creek Golf Club	Shoestring	Campus/Elastic
9	Hidden Hills Golf and Country Club	Shoestring	Static

Figure 15: Case Studies Locations

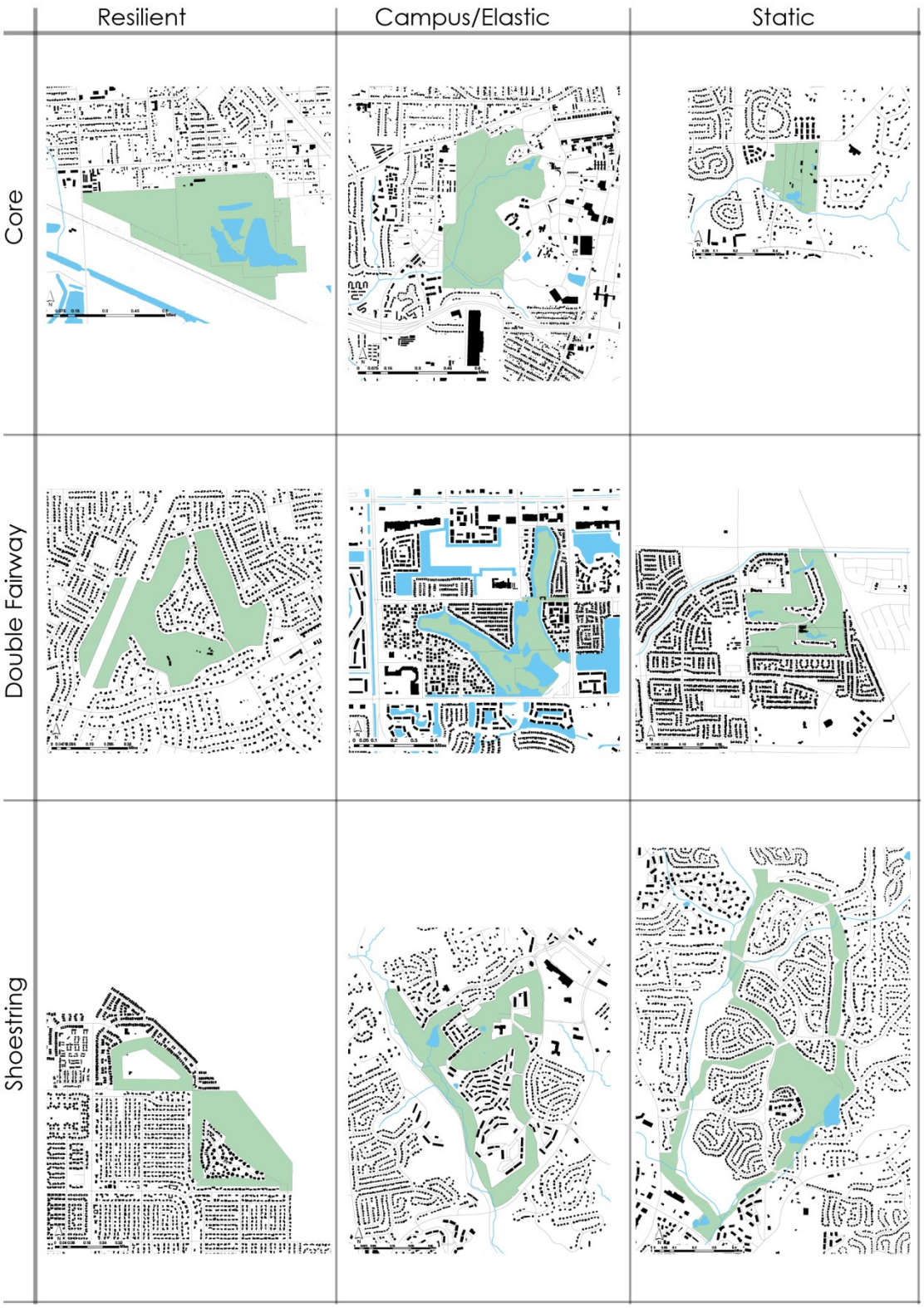


Figure 16: Closed golf courses | Case Studies

**full analysis set available in appendix B*

Internal and External Morphology

The previous chapter on typologies lists three different golf course types: core, double fairway, and shoestring.

When contemplating retrofits to closed golf courses, developers and designers must first consider the golf course parcels themselves. The internal structure of the golf course is fundamental to what will be built.

Core golf courses are relatively straight-forward to retrofit. Because they are large, consolidated pieces of land, one must only consider the best way to subdivide the acreage.

Double fairway golf courses are somewhat trickier to deal with. Double fairways come in a few varieties; in some instances, like the former Elkhorn Country Club (Figure 17), they look like a core golf course with a strip of parcels cutting through.

Figure 17: Double Fairway

In other instances, like the former Raintree Golf Resort (Figure 18) and former Spring Hill Golf and Country Club, (Figure 19) the double fairway course is more spread out.

Figure 18: Double Fairway

Figure 19: Double Fairway

Double fairway courses, while not as simple to subdivide and develop as the core golf courses, still have the advantage of the two side-by-side fairways which give adequate width to for development. In Figures 17, 18, and 19, the double fairways are approximately 500 feet wide. This is wide enough to realistically fit a street and a developable block.

In the case of shoestring golf courses, development is inherently difficult. The width for the single fairway is approximately 240 feet. This dimension is too small to fit a block and a street. It could, at most, fit a strip of development and a street. In most examples of the shoestring golf courses, there is an area that is larger and more developable than the others (Figures 20 and 21). This portion contained the clubhouse, parking, and usually a pool and tennis courts. Development efforts may be concentrated in these areas to minimize site construction costs and to potentially increase density.

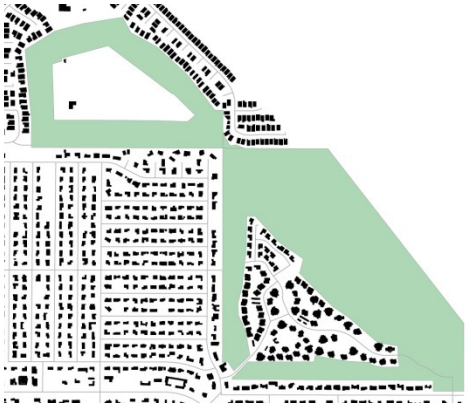


Figure 20: Shoestring

Figure 21: Shoestring

After contending with the morphology of the golf course itself, designers and developers must evaluate the surrounding morphology. The previous chapter on typologies defines resilient, static, campus and elastic tissues. These tissue definitions inform the analysis of tissues surrounding the nine case studies. Tissues are a key influence on how and if the former golf course is going to connect to the larger morphology. The surrounding morphology directly informs points of access; this number is important because not having multiple points of ingress or egress severely limits the type and density of development.

Closed golf courses surrounded by resilient tissue are more likely to have multiple points of success. Because resilient tissue is a grid, it intrinsically has more potential points of connection than other tissues. Core golf courses also tend to have more points of access because they are surrounded on a majority of sides by public right-of-way. Therefore, core golf courses surrounded by resilient tissue have the most opportunities for points of access (Figure 22 and 23).

Figure 22: Core golf course surrounded by resilient tissue

Figure 23: Core golf course points of access

Double fairway and shoestring golf course types that are surrounded by resilient tissue tend to not have many points of access because these golf course types

are usually bounded by private parcels as opposed to public right-of-way (Figures 24-27).

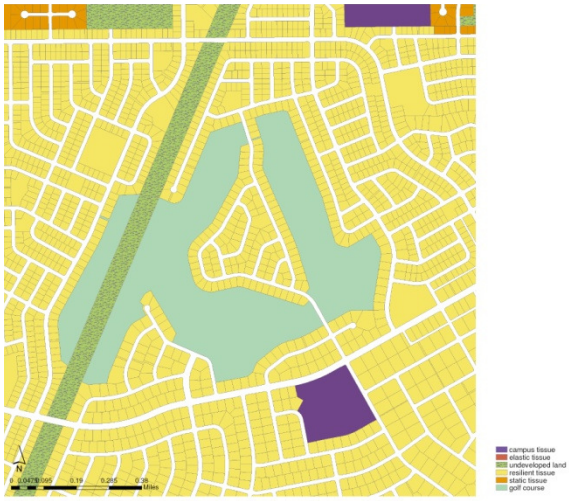


Figure 24: Double fairway; resilient tissue

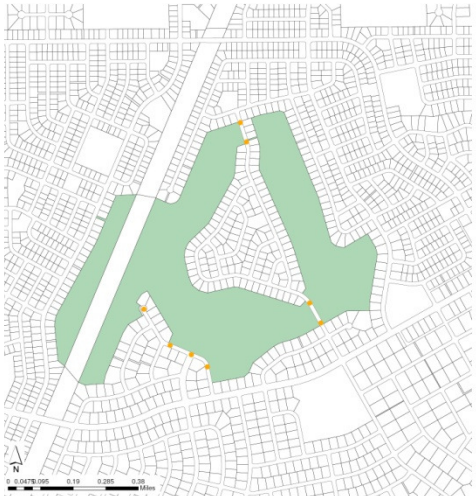


Figure 25: Access

Figure 26:Shoestring; resilient tissue

Figure 27: Access

Golf courses surrounded by static tissues generally have the least points of access. Because static tissues favor single-family houses fronting a dendritic street pattern, this leaves little opportunity for connecting to a street network (Figures 28 and 29).

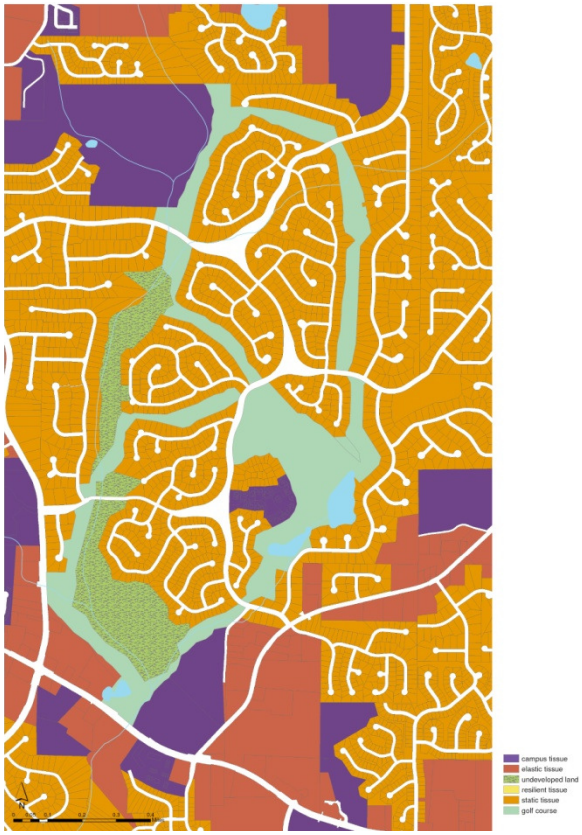


Figure 28: Shoestring; static tissue

Figure 29: Access

The number of points of access for golf courses surrounded by campus/elastic tissues is dependent on how much of the golf course is adjacent to a public right-of-way. In the case of the former Pike Creek Golf Club—a shoestring golf course surrounded by campus/ elastic tissue—about half of the golf course fronts a public right-of-way , giving developers and designers ample opportunity for development (Figure 30 and 31).

Figure 30: Shoestring; campus/elastic tissue

Figure 31: Access

In the case of the former Raintree Golf Resort—a double fairway surrounded by campus/elastic tissues—the golf course is mostly surrounded by private property and therefore has few access points (Figures 32 and 33).

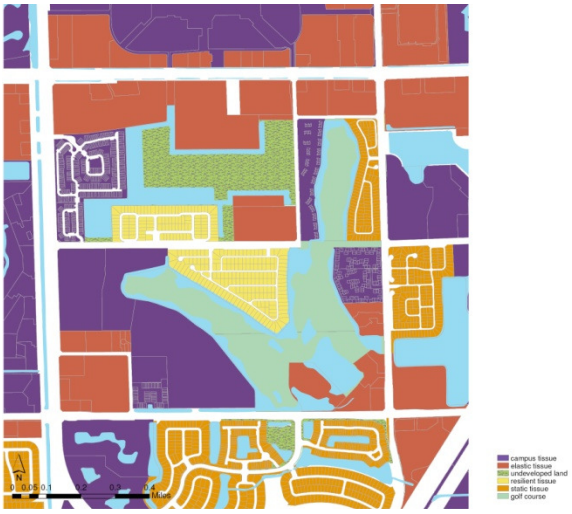


Figure 32:Double fairway; campus/elastic tissue

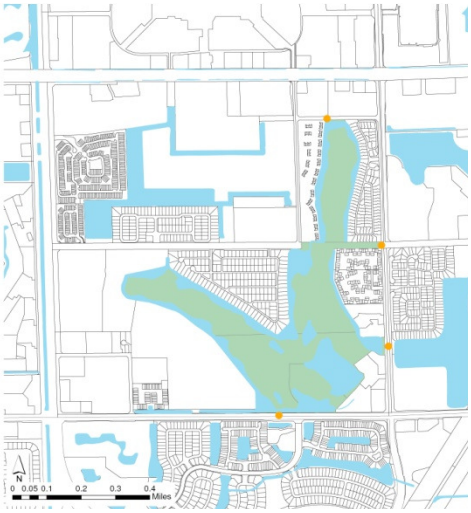


Figure 33: Access

Environmental Constraints

Once the developer or designer takes into account the morphological issues, the next aspect of retrofitting a golf course is the environment. The three main environmental factors this paper analyses are floodplains, slopes and position in the watershed.

The majority of municipalities prohibit development in the FEMA 100-year floodplain. Many also add restrictive buffer zones around stream and wetlands. Due to changing weather patterns and more intense flooding incidents, it has become much riskier to build even in the 500-year floodplain.

Significant portions of many golf courses were originally located in floodplains because it made sense from a financial standpoint to locate designated green recreation space in areas that regularly flooded and therefore could not be developed (Figures 33 and 34).

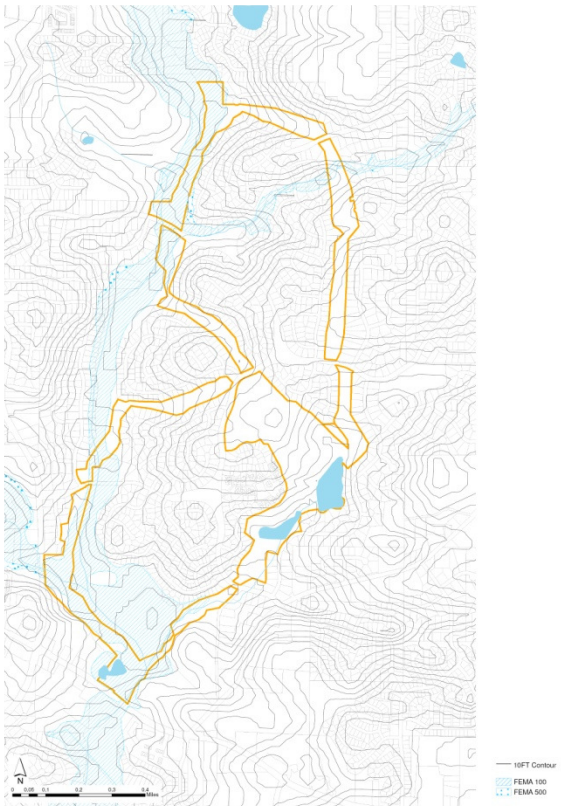


Figure 34: Floodplain

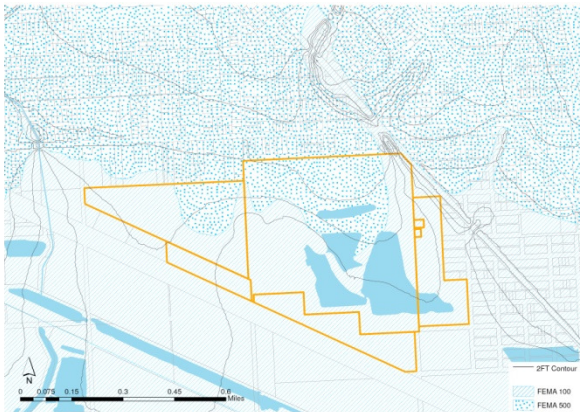


Figure 35:Floodplain

Position in the watershed is also a major factor in golf course retrofits. If a golf course retrofit is positioned high in the watershed, then it should be designed to hold water for as long as possible. If it is near the bottom of the watershed it should be designed to release water as quickly as possible.

While these recommendations may seem esoteric, they are very important from a regional water strategy and from a site design view. Courses at the bottom of the watershed are more directly affected than courses at the top. If a course at the bottom holds water during a rain storm, then when water from the top of a watershed reaches it, the course will experience major flooding with all the new water running in. Courses as the top of the watershed should hold the water to mitigate extreme flooding in areas lower down the watershed.

Figures 36 and 37 are examples of golf courses at the lower ends of the watershed. They should therefore try to get the water out as quickly as possible.

Figure 36: Bottom of Watershed

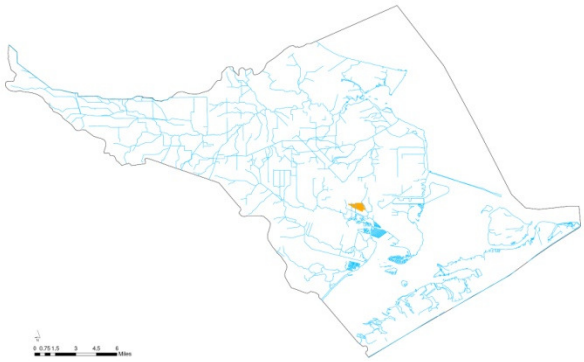


Figure 37: Bottom of Watershed

Figures 38 and 39 show golf courses at the top of the watershed, which should be designed to hold stormwater as long as possible.

Figure 38: Top of Watershed

Figure 39: Top of Watershed

All of these recommendations are of course subject to municipal regulations on water. While many municipalities have antiquated notions of water management that do not address these regional issues, other municipalities take a more comprehensive view and will welcome design strategies that promote better regional water management.

Steep slopes are also an impediment to development. Building on ground with a slope below 7% is inexpensive. If the slope is 7%-12%, the developer must allocate a larger percentage of the budget to site construction. With a12%-20% slope, the developer is spending a lot of money on site work, and anything over 20% is not worth the cost unless one is in a major city with very high property values like New York or San Francisco.

In many cases, golf courses are relatively flat and site construction is minimal (Figures 40 and 41).

Figure 40: Flat site

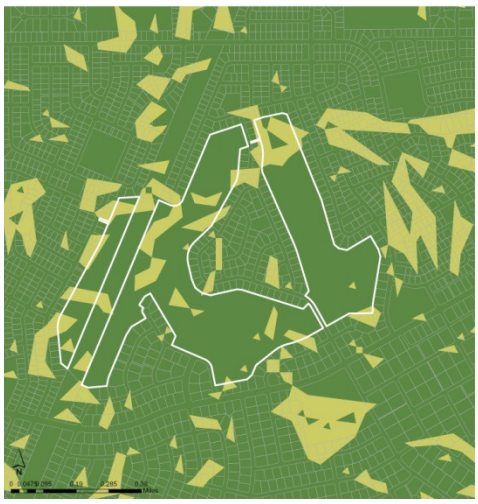


Figure 41: Flat site

However, in areas where the land is not flat, site construction can quickly overwhelm a budget. In some instances like the Pike Creek Golf Club, the original golf course designers located fairways in areas that were too steep to build housing. Site grading in areas where developers did choose to build exacerbated the steep slopes of the fairways. Due to slope conditions, the majority of this golf course in undevelopable (Figure42).

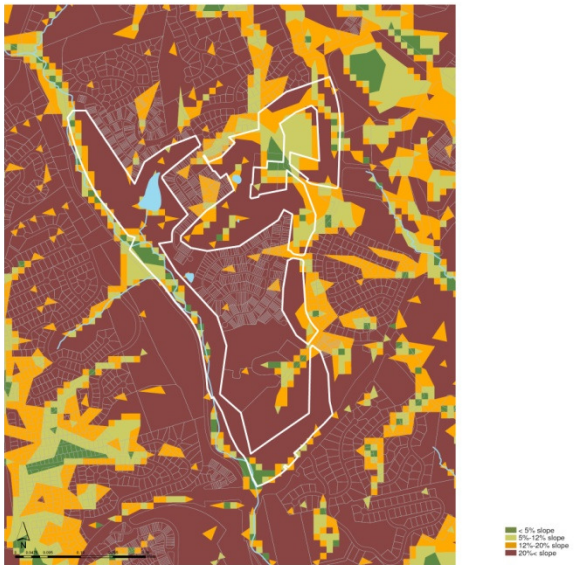


Figure 42: Steep site

Market and Regional Context

Regional context is also important for teasing out what uses should be included in a golf course retrofit and whether or not a golf course should even be retrofitted in the first place.

In the regional context, a golf course will fit one of five categories: urban, first ring suburb, fringe suburb, rural and resort.

Urban golf courses are mostly municipal golf courses. As illustrated in the literature review, municipal golf courses have been some of the main courses to close. Because urban golf courses are near a central business district (CBD) and other high-density development, they are in prime real-estate locations. Given that retrofits of urban golf courses have the potential to generate more value than retrofits of other areas, the developer may also be able to allocate a larger percentage of the budget to site work. Urban golf courses are smart choices for

redevelopment. The Fort McPherson golf course is in the City of Atlanta, near transit, and 10 minutes from Downtown (Figure 43).

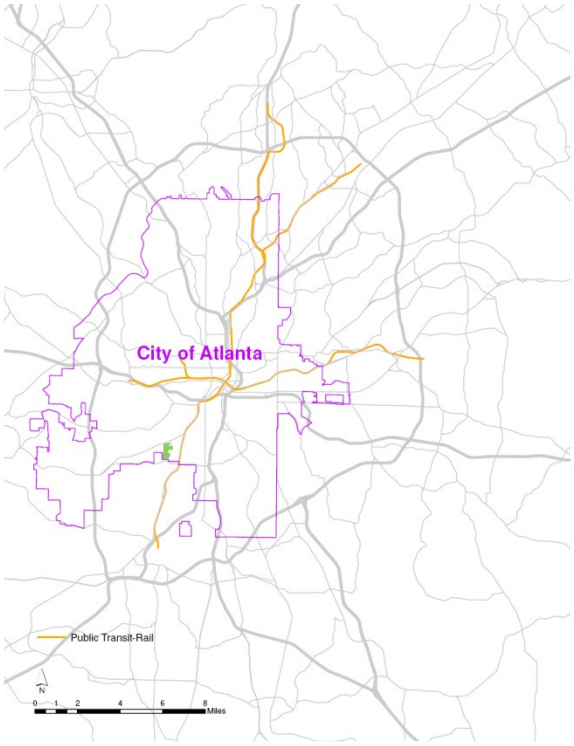


Figure 43: Urban golf course

First-ring suburban golf courses are usually associated with a residential neighborhood development. Older first-ring neighborhoods had a hard time attracting people willing to pay the golf course fees both before the housing crash and after because people were less attracted to the houses. Closed golf courses in first-ring suburbs are smart choices for retrofits. They have the advantage of being in a more mature market; they are fairly close to a central city core, and they are on robust transportation networks (Figures 44, 45).

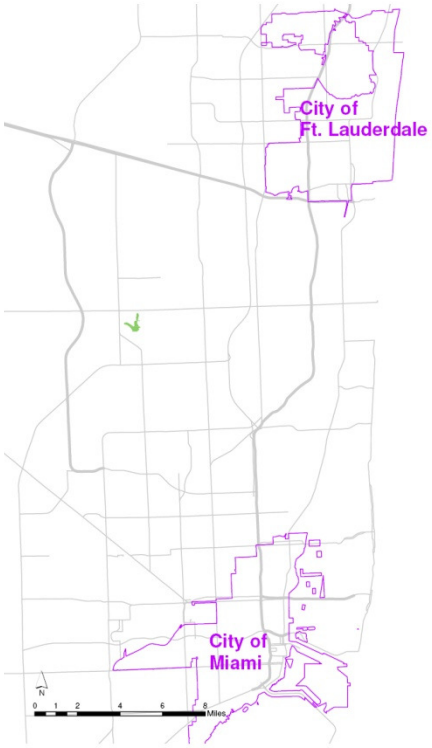


Figure 44: Suburban golf course

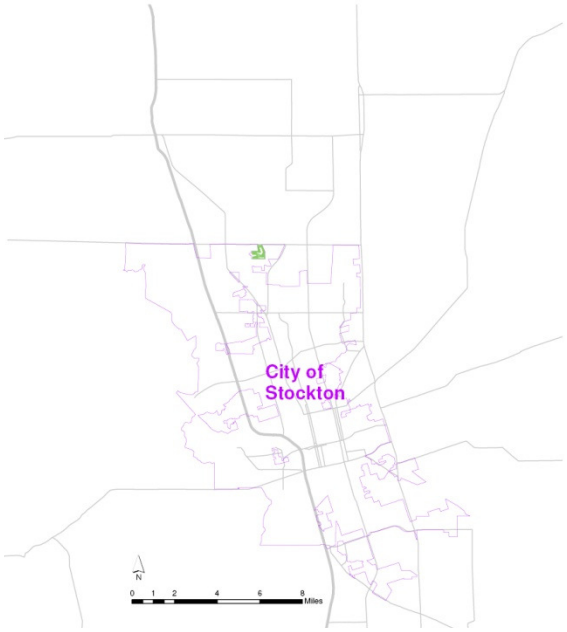


Figure 45: Suburban golf course

Golf courses in fringe suburbs were hit hardest by the recession because they were built mostly on the kind of speculative development that fueled the housing bubble. Like first-ring golf courses, these courses are also part of a neighborhood development. Unlike the first-ring suburban golf courses, golf courses in fringe suburban developments are not surrounded by a mature market. They usually have a sparse transportation network, and they are inconveniently far away from the central metropolitan area (Figures 46, 47). Therefore, fringe suburban closed golf courses are potentially risky choices for redevelopment.

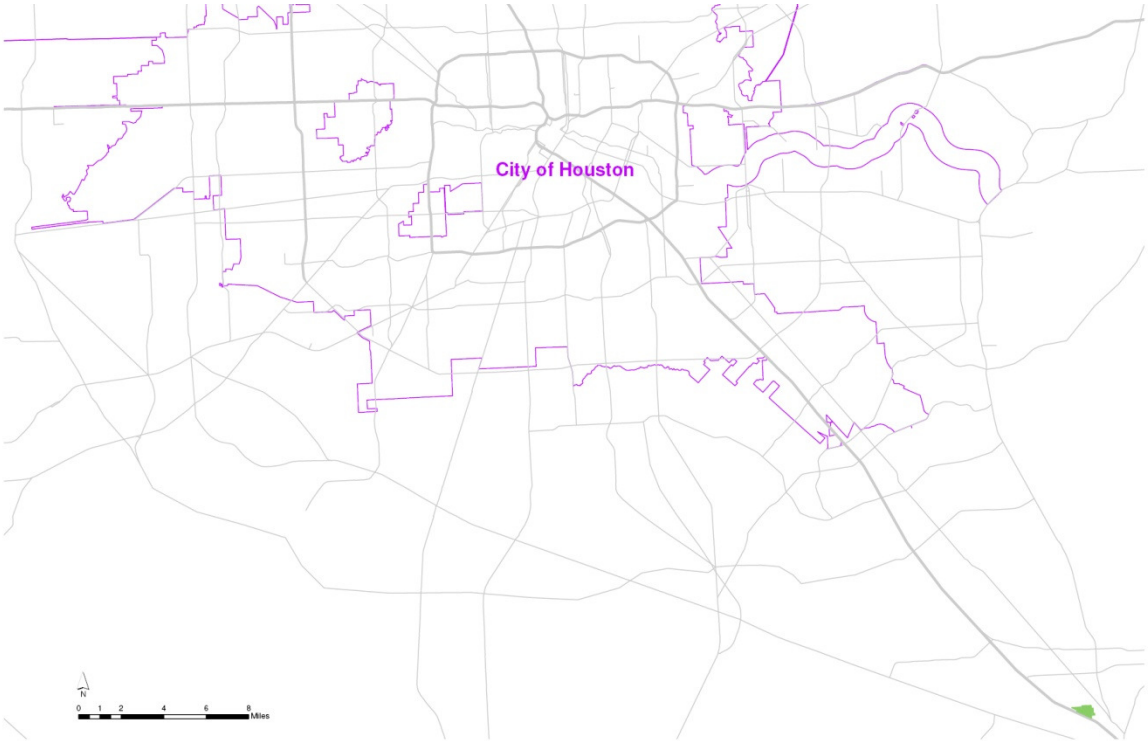


Figure 46: Exurban golf course

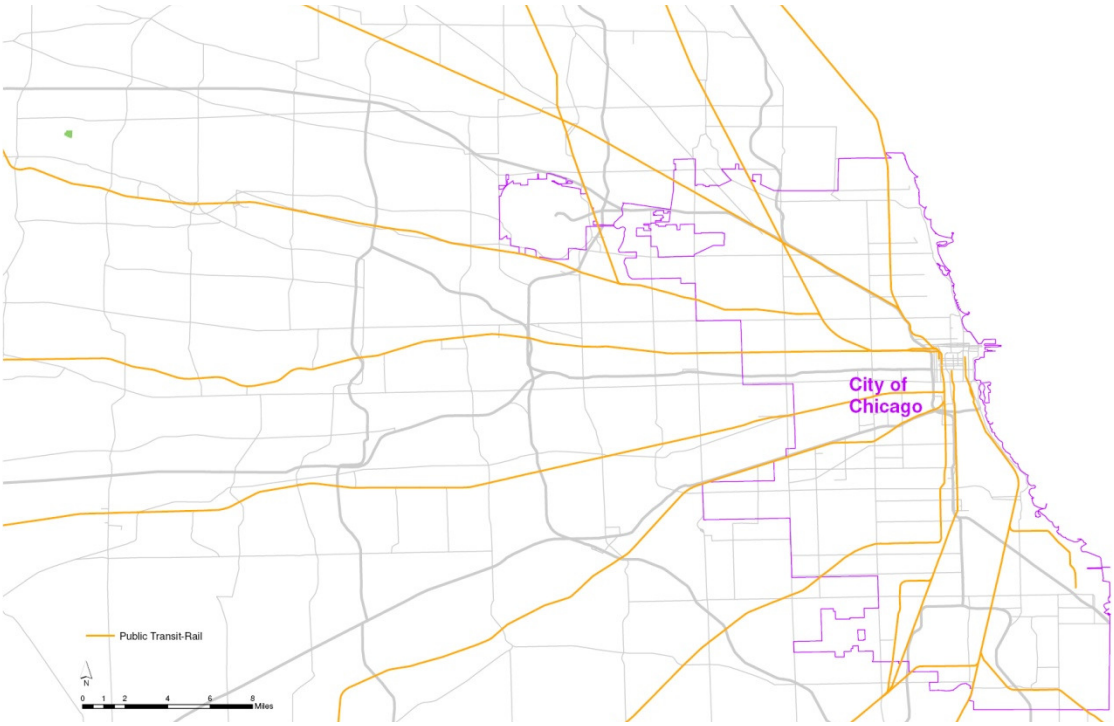


Figure 47: Exurban golf course

Golf courses attached to a resort have weathered the downturn in the golf industry fairly well. Such golf courses are usually paired with natural amenities like lakes, beaches or natural forms and with man-made amenities like conference venues and hotels. Revenue from these other development pieces helps offset any decline in demand for golf. Naturally, there are exceptions such as the Whitewater Country Club in Palm Springs, a historic resort community in California. Unlike more successful resort golf courses, this golf course was not attached to any other man-made amenities and attempted to rely on the surrounding location with unsuccessful results. This golf course, if designed and developed smartly, could be a good candidate for a retrofit (Figure 48).

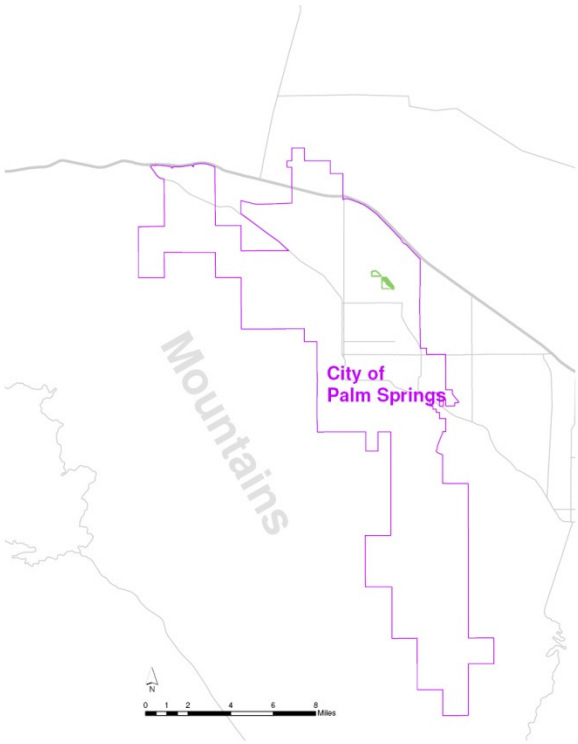


Figure 48: Resort golf course

Rural, closed golf courses are victims of a declining rural population and, in some instances, of pre-recession speculative development. These golf courses are very far away from any metropolitan center; they are in remote places and are surrounded by either farm land or greenfields. Rural golf courses are highly risky and highly unlikely choices for retrofits. Preferably, they should be reverted back to nature. Owners of closed rural golf courses should consider selling the land to a state government or perhaps, if applicable, participate in a Transfer of Development Rights program to recoup some of the losses. For the reasons illuminated, this paper does not include any analysis on rural golf courses.

The golf course's location in the regional context is essential in determining which uses are feasible in the retrofit. The current market conditions are the other piece

of the regional context. Because markets fluctuate quarter to quarter, putting a market analysis for each case study is meaningless. When deciding what use to put into a golf course retrofit, it is most efficient to understand the supply side implications of different program types.

Based off of the literature review, there are several programmatic uses for golf courses: single-family residential, multi-family residential, industrial, mixed-use residential, office, park space, community center, and age-restricted communities.

Single-family residential can go almost anywhere, since it is very low density and does not require direct access to an interstate to be successful. Because urban areas and first-ring suburban areas capture better value with higher density development, single-family residential development should be reserved for exurban golf courses.

Multi-family residential needs to be on a main thoroughfare and/or be near other high-density development. Ideally, they should also be located near public transit. Closed golf courses in urban or first-ring suburbs are the best candidates for this use.

Industrial uses need flat land, usually 5% or less. It also needs access to major interstate highways because of the truck traffic. Core golf courses are the best candidates for industrial use.

Mixed use residential needs to be relatively high density and also needs to be near other high density development. The development needs good transportation connections and should be on a major thoroughfare. Ideally it

would also have some public transportation access. The development should also be close to a metropolitan center so that there is a clear market. Small towns or exurban areas are not good places for mixed use residential. First-ring suburbs and urban golf courses are better suited for this use.

Office parks need to be connected to a major interstate. They should be in a major metropolitan area so that they are a part of a defined market. Therefore, this use is not an option for closed golf courses in small towns, nor is it a valid option for courses in exurban areas. In reality, they are not an option for any area; office parks have been failing in most areas (Kusisto).

A park is a default option for many closed golf courses. However, in order to be successful, the golf course should be part of a municipality or county that is an appropriate size to have a park. The municipality must also have the funds to acquire the land for and operate the park. The municipality should also see if an area is park rich or park poor. Park rich area tends to have between 6.5-10.5 acres of parks per 1000 people.

A community center is also a default option for many closed golf courses. As with parks, the municipality must have both the funds and the demand for a successful community center. They need to be in an area with enough demand to be successful. The land a community center occupies should ideally be cheap land since it is not a revenue generator. First-ring suburban golf courses are well suited for community centers.

Specialty uses such as age-restricted communities have also become a popular option. In order to be successful, these developments must be located near

other amenities. They should ideally be transit accessible, as many senior are unable to drive. Therefore, closed golf courses located in metropolitan areas are best suited for this use. Urban golf courses are best, but first-ring suburban golf courses can also be successful provided they meet these criteria.

All of these programmatic options have the option of being combined with keeping part or all of the golf course. As noted in the background, there is potential latent demand for a golf course. The NGF found that golf courses surrounding a closed course did not see a significant uptick in players, meaning golfers had simply stopped playing(NGF "Closed Golf Courses – What Happens after the Final Shot Is Played?"). While the NGF cites the economic downturn for this phenomenon, there may currently be enough of an upswing in some markets to warrant reopening a percentage of the former 18 holes.

While programmatic choices are compelling, they are ultimately irrelevant. The market is inherently elastic and thus is an unreliable source for making decisions on how to design a golf course retrofit. Morphological conditions, that is the shape of the site and the physical context of the surrounding area is inelastic and unlikely to change in the near term. Therefore, any plans for golf course retrofits should rely on responses to the site's surroundings and environment.

SUBDIVISION PLANS

This section proposes plans for each of the nine case studies that respond to the current morphology. These subdivision plans do not take into account market situations because one cannot predict future market conditions. The market is elastic; morphology is inelastic. Therefore, it is most prudent to create subdivision plans that work and that are responsive to conditions on site and surrounding tissue conditions.

This section presents potential subdivision plans for each case and then analyzes these plans for any general conclusions about subdividing closed golf courses. Full graphic analysis is available in Appendix A. Full numerical analysis is available in Appendix B.

In the case of the former Lakeview Country Club in Galveston, Texas, 73% of the golf course is in the 100-year floodplain and is therefore unsuitable for development (Figure 49). Of the portion that can realistically be developed, the most logical subdivision plan extends the existing street grid and capitalizes of parcels fronting streets leading to the water (Figure 50). This subdivision plan yields blocks that are 260 feet by 350 feet and 260 feet by 770 feet. The 100 parcels are all approximately 60 feet by 130 feet.

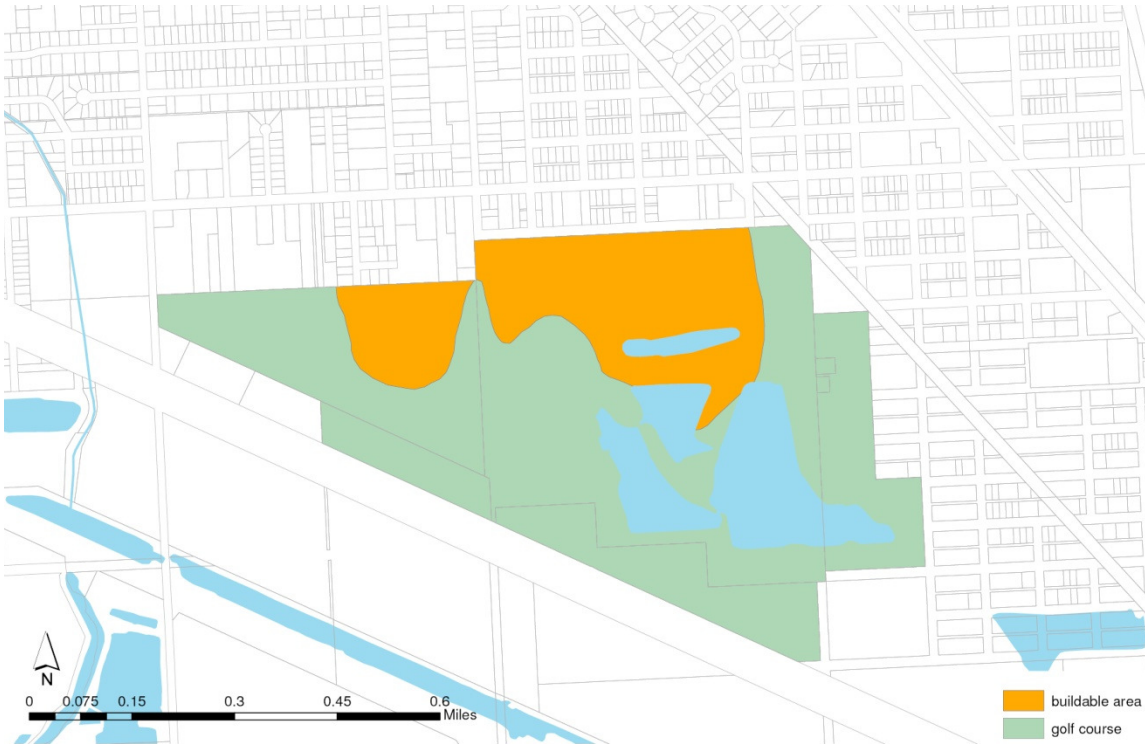


Figure 49: Suitability analysis: Core golf course:resilient tissue

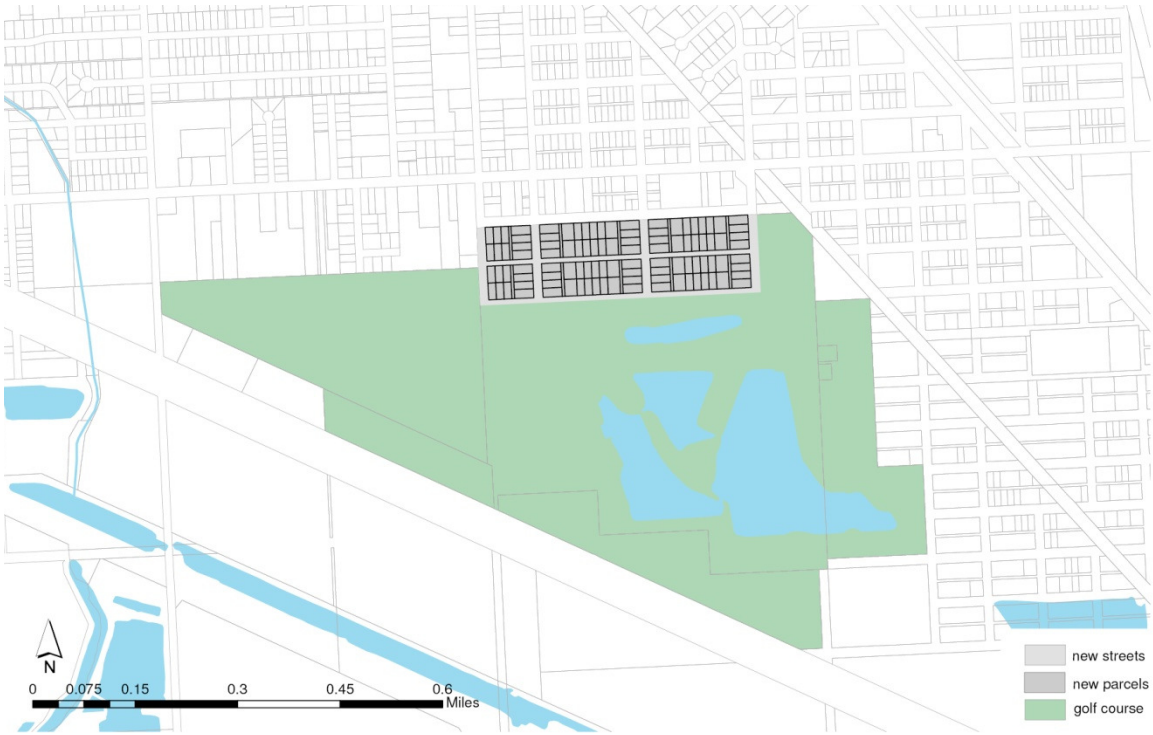


Figure 50: Subdivision plan : Core golf course:resilient tissue

The former Fort McPherson golf course has problems of steep slopes and floodplains. Therefore, 66% of the land is developable (Figure 51). The subdivision plan links the public right-of-way to existing public streets and to existing internal campus streets. The plan also keeps development out of the large swaths of steep slope and out of the floodplain (Figure 52). The blocks are 350 feet by 240 feet. The 201 parcels are approximately 60 feet by 120 feet.

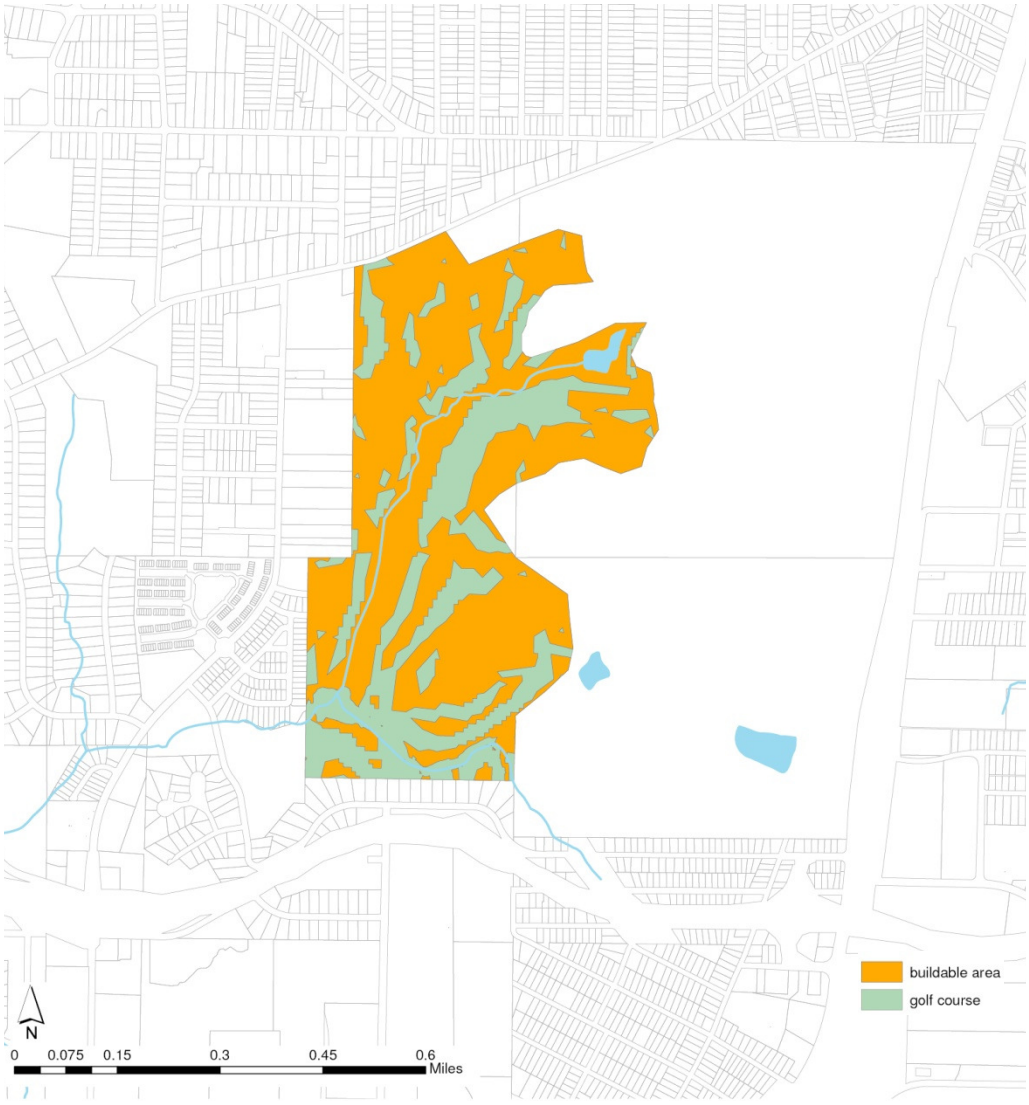


Figure 51: Suitability analysis: Core golf course:Campus/Elastic Tissue

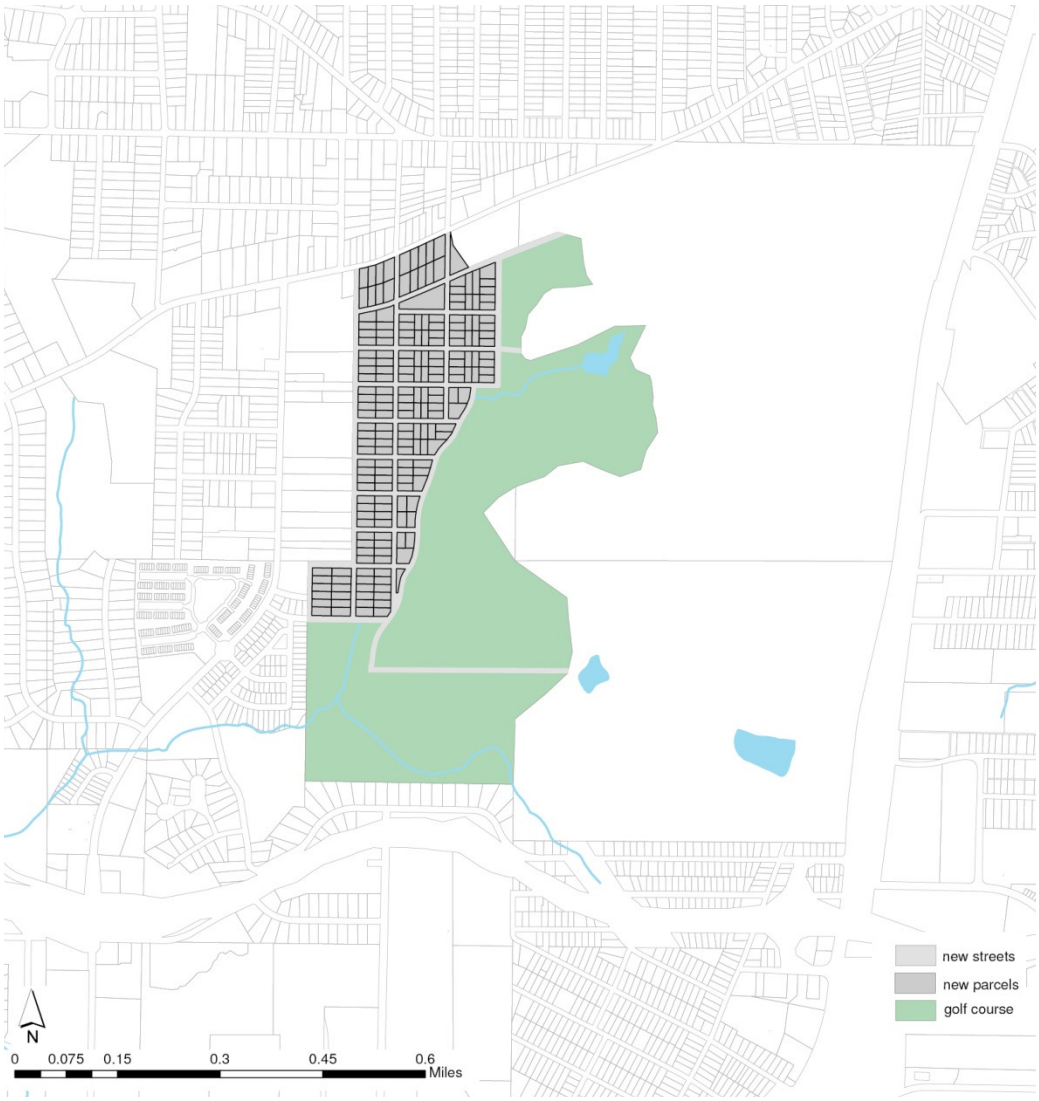


Figure 52: Subdivision plan: Core golf course:Campus/Elastic Tissue

The Rolling Knolls Country Club is a former 9-hole golf course surrounded by static tissue. It has a floodplain at the southern end of the site, but 81% of the site is developable (Figure 53). A small portion of the site has slopes between 12% and 20%. This portion is developed in the subdivision plan because is small enough that it is more cost effective to do site work on this portion than to try to design a subdivision plan around it. Because it is a core golf course, the subdivision plan is fairly straightforward. The site is gridded into blocks approximately 240 feet by 420

feet with 156 parcels that are 60 feet by 120 feet (Figure 54). Parcels front the major streets surrounding the golf course and the plan charge the wider streets leading south toward the creek.

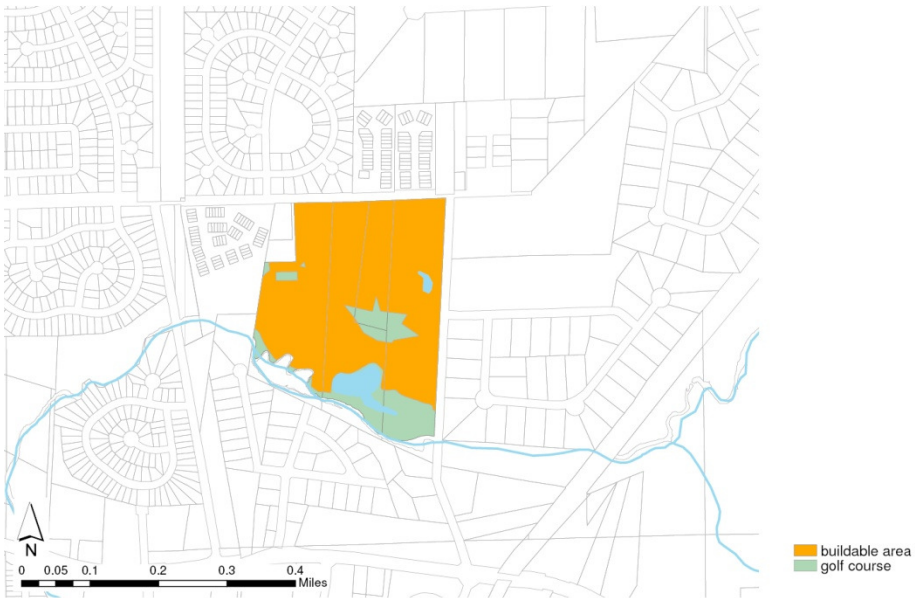


Figure 53: Suitability analysis: Core golf course: Static Tissue

Figure 54: Subdivision plan

The former Spring Hill Country Club is a flat course with minimal floodplain (Figure 55). It is completely surrounded by a residential neighborhood with single-family homes backing up to the golf course parcels. The subdivision plan has new single-family parcels approximately 100 feet by 120 feet that share backs with the existing parcels. A new road wraps around the golf course parcels providing a front to the greenspace (Figure 56).

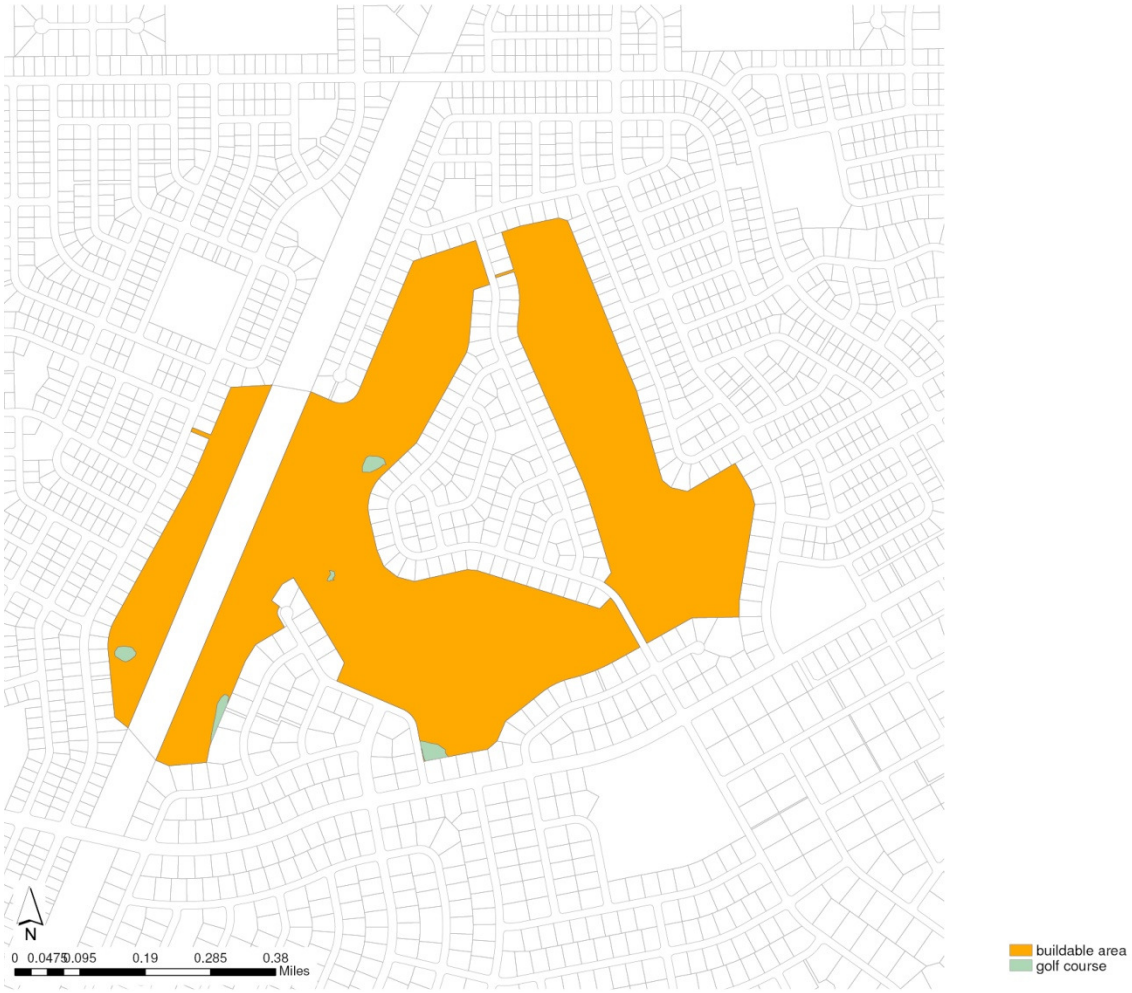


Figure 55: Suitability analysis: Double-Fairway : Resilient Tissue

Figure 56: Subdivision plan: Double-Fairway : Resilient Tissue

The former Raintree Golf Resort outside of Miami, Florida is completely in the 100-year floodplain (Figure 57). Although in previous decades subsidized flood insurance has underwritten development in disaster-prone areas of Florida, the FEMA Flood Insurance Reform Act of 2012 is making such new development implausible. Therefore, these parcels should stay greenspace (Figure 58). They can be used entirely, or as a mix of, golf course, agriculture, recreation or some other floodplain-friendly function.

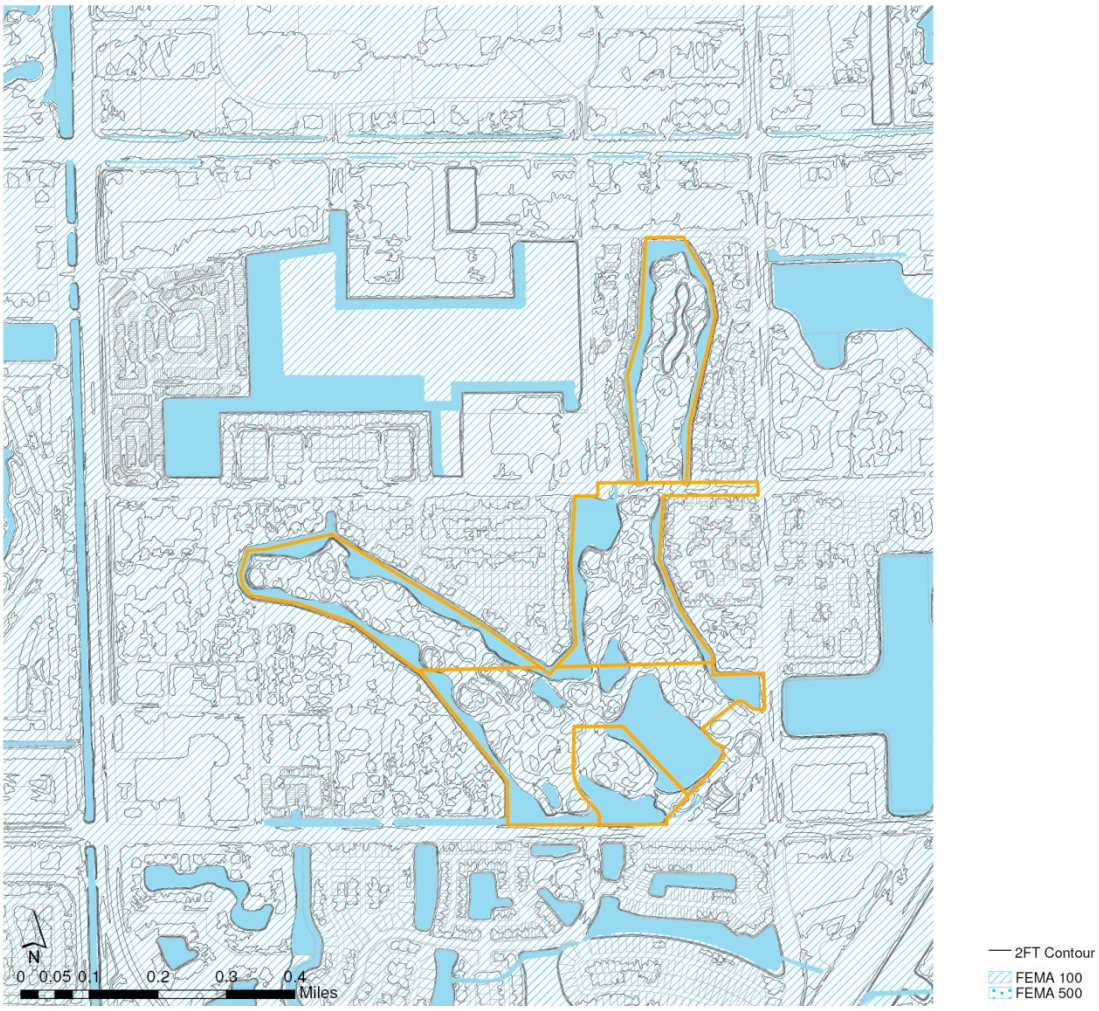


Figure 57: Floodplain: Double-Fairway : Campus/Elastic Tissue

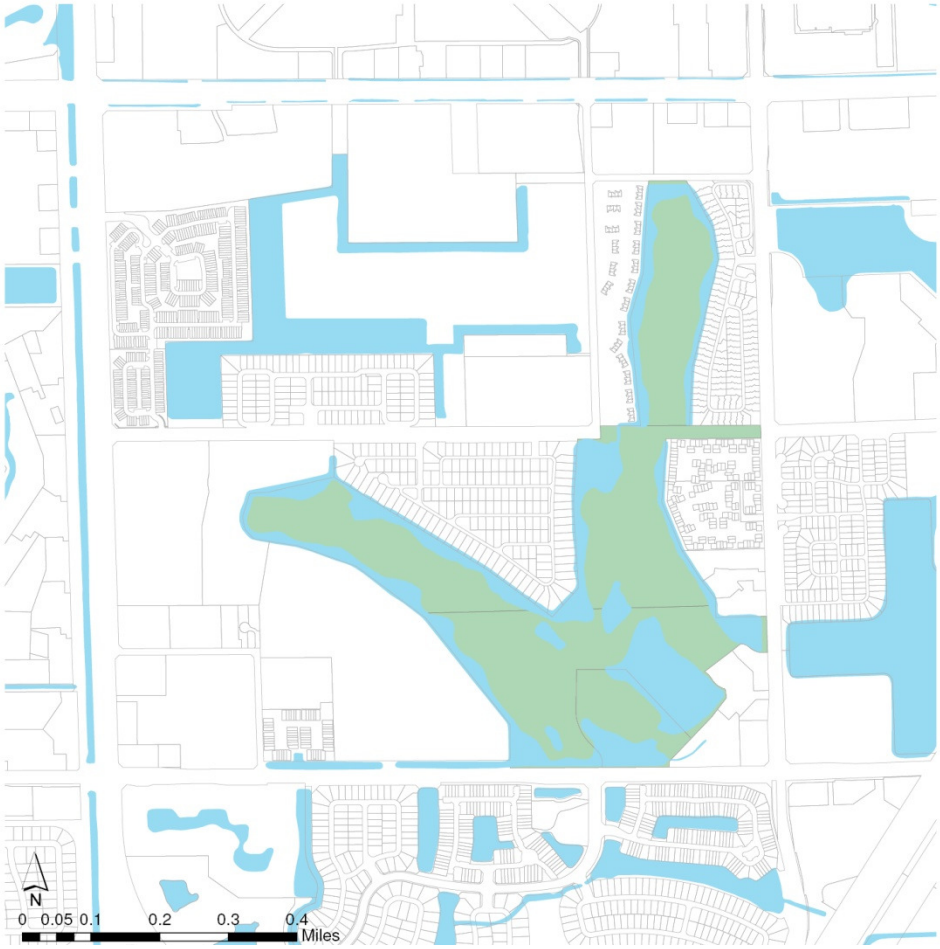


Figure 58: Closed golf course only suitable for greenspace or agriculture

The former Elkhorn Country Club in Stockton, California is a double fairway golf course with portions that are large enough to develop. This course is flat and has minimal floodplain, which means that almost the entire site is developable (Figure 59). The western portions of the site are larger and more amenable to subdivide. Concentrating blocks in these areas maximizes street frontage while still leaving green space for the development (Figure 60). This plan has 155 parcels approximately 60 feet by 120 feet.

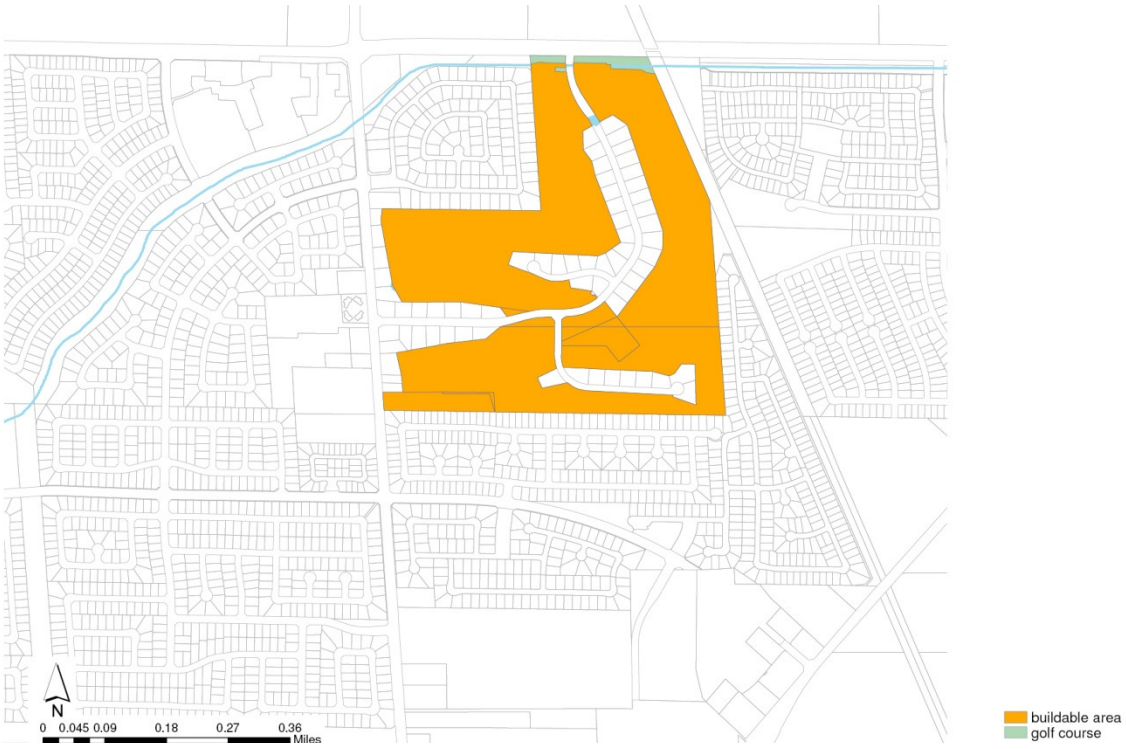


Figure 59: Suitability analysis: Double-Fairway : Static Tissue

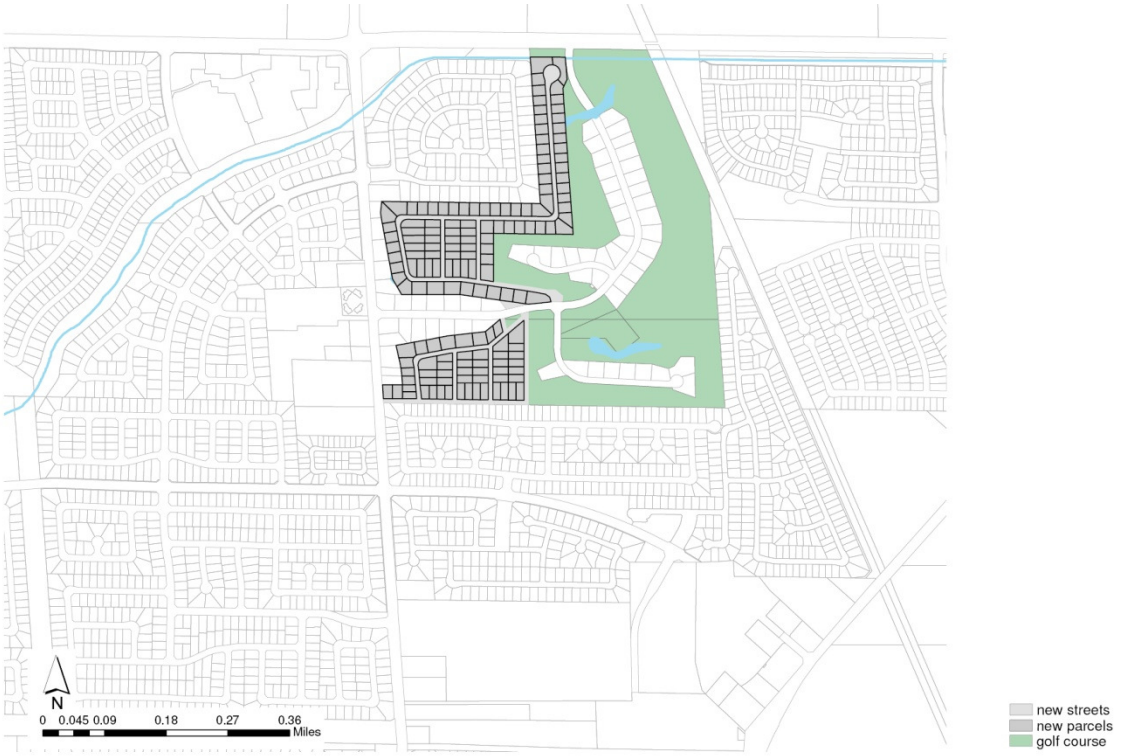


Figure 60: Subdivision plan: Double-Fairway : Static Tissue

The Whitewater Country Club in Palm Springs, California is also almost entirely developable (Figure 61). The subdivision plan takes advantage of the larger area to the east and develops it with blocks that are 300 feet by 740 feet and that are oriented towards the eastern desert view. Parcels also surround the northern loop with streets fronting the interior area that is not part of the course in anticipation that it will be later developed (Figure 62). The 115 parcels are approximately 100 feet by 150 feet.

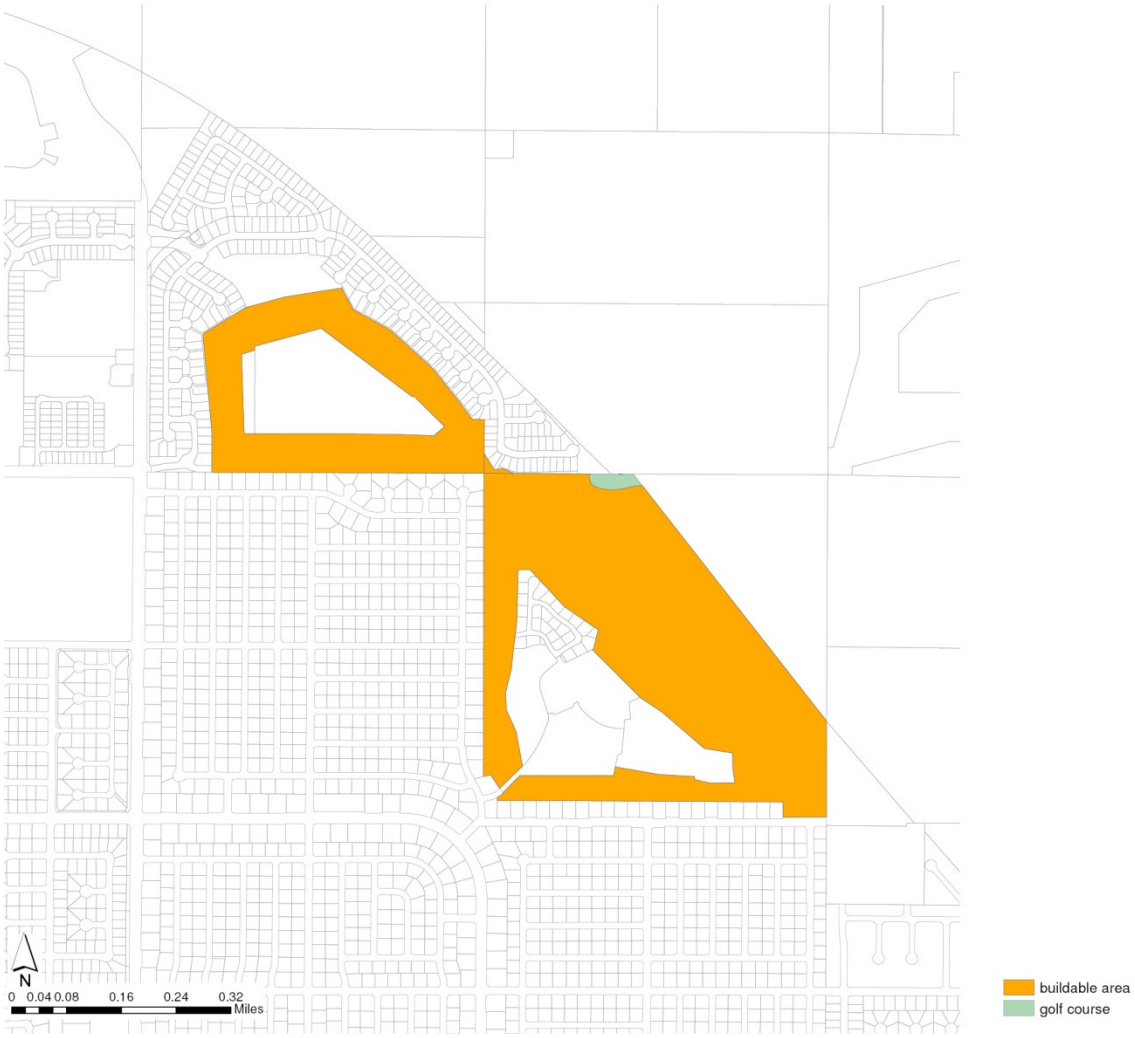


Figure 61: Sustainable analysis: Shoestring : Resilient Tissue

Figure 62: Subdivision plan: Shoestring : Resilient Tissue

The former Pike Creek Golf Club has a small strip of land in the floodplain, but the majority of the golf course has very steep slopes. Therefore, the majority of the golf course, 75%, is undevelopable (Figure 63). Only a small piece of land in the north-easternmost section is large enough to realistically develop. This small area will still require extensive site work, however. The developed area yields blocks that front the major arterial and that are approximately 300 feet x 400 feet

(Figure 64). Other parcels share backs with more residential areas. The 86 parcels are approximately 60 feet by 130 feet.

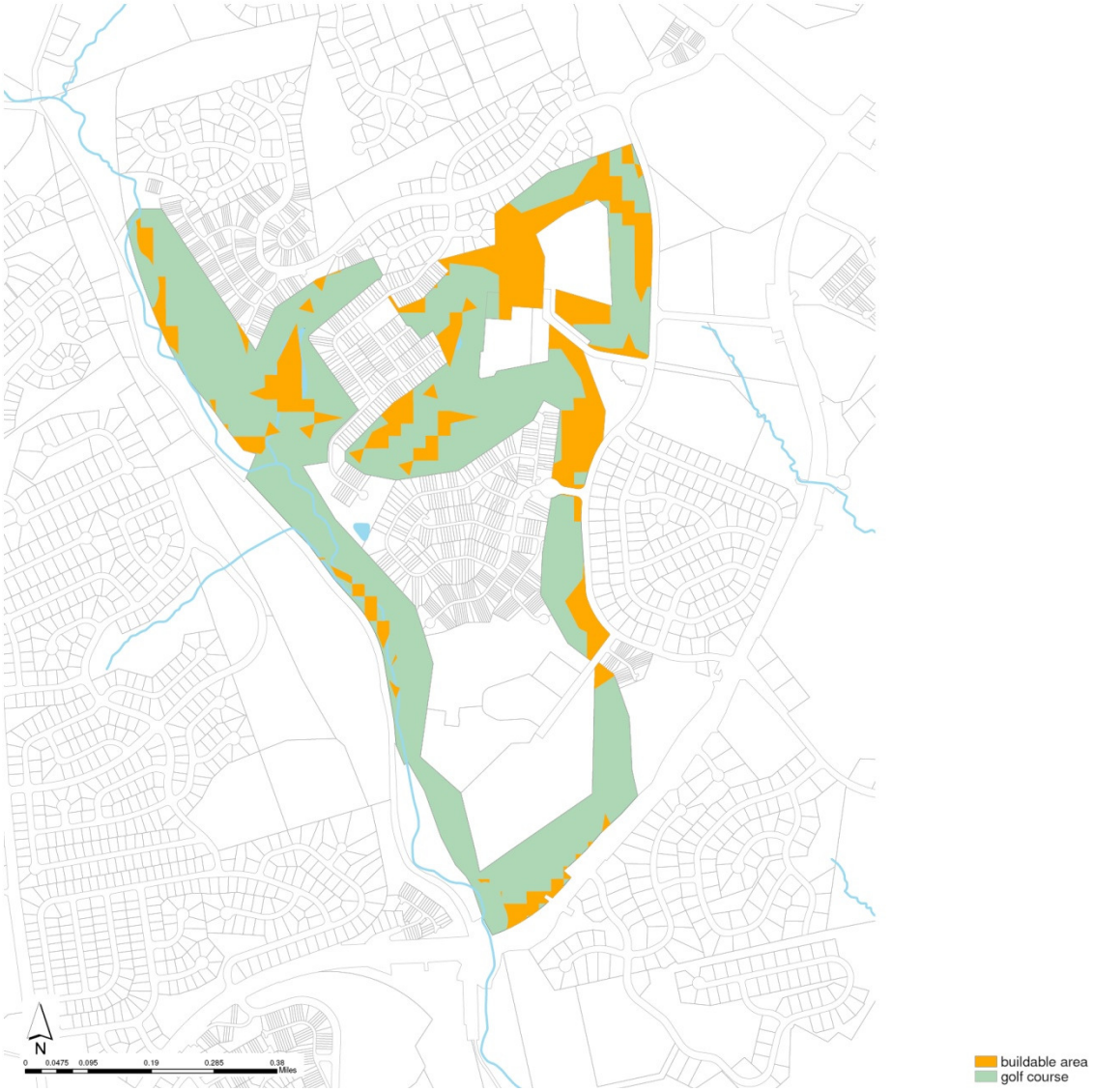


Figure 63: Suitability analysis: Shoestring : Campus/Elastic Tissue

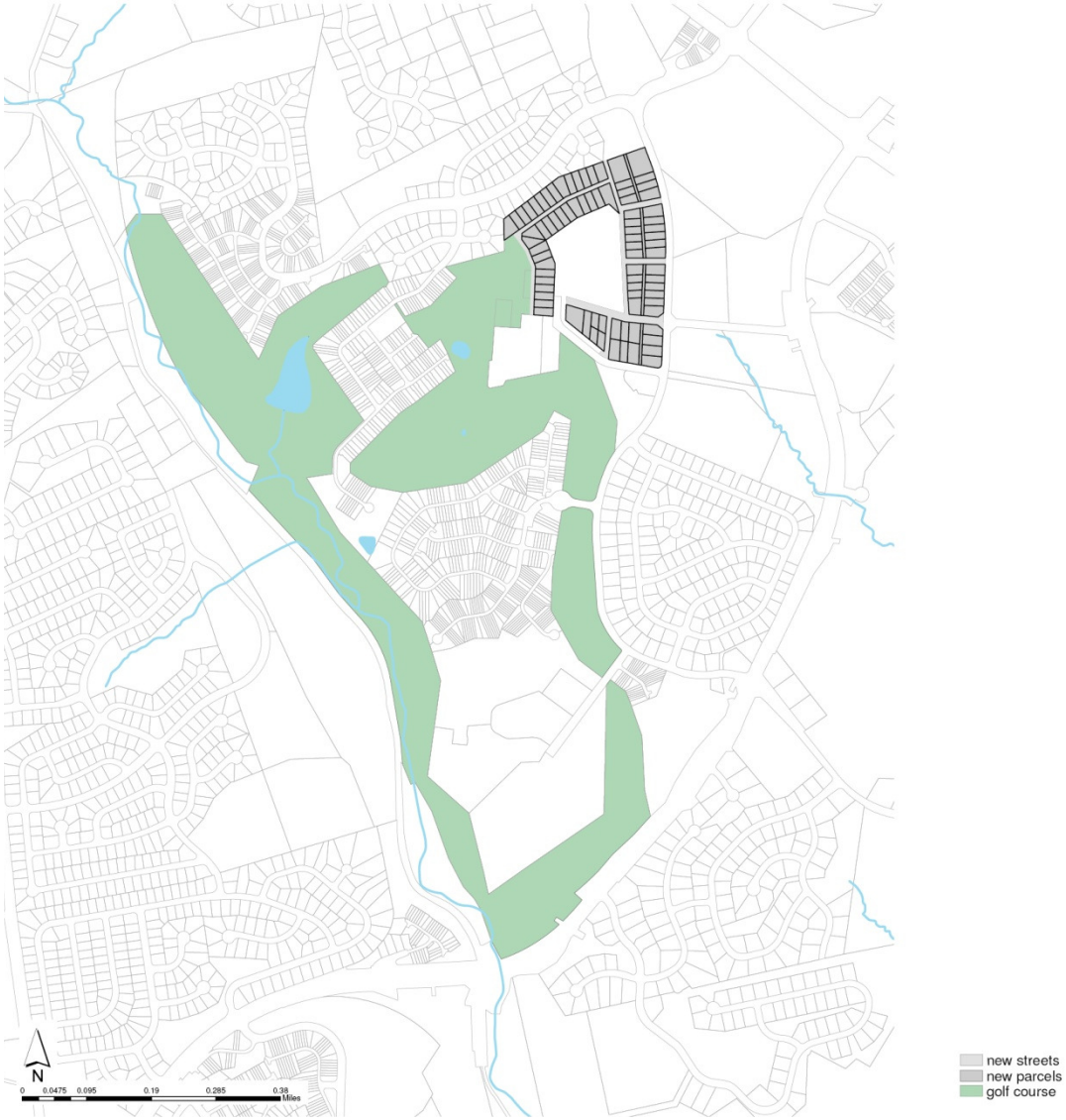


Figure 64: Subdivision plan: Shoestring : Campus/Elastic Tissue

In the final case study, the former Hidden Hills golf course, the shoestring form leaves only a single piece of land large enough to develop. It is not in the floodplain nor does it have steep slopes, so this piece is completely developable (Figure 65). The blocks in this subdivision plan are reminiscent of the Olmstead block with its curves lines that follow the natural topography (Figure 66). The 151 parcels are approximately 60 feet by 120 feet.

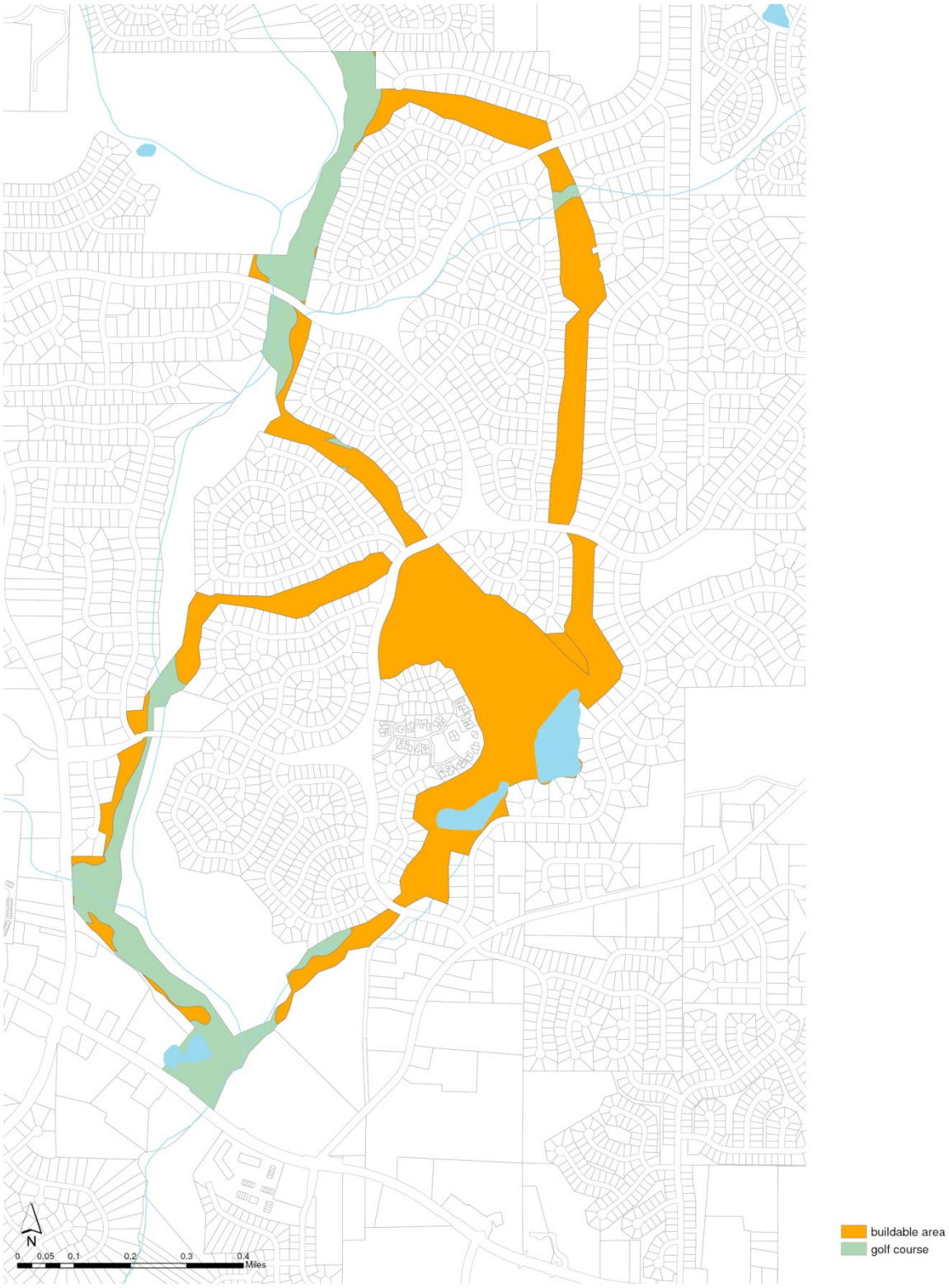


Figure 65: Suitability analysis: Shoestring : Static Tissue

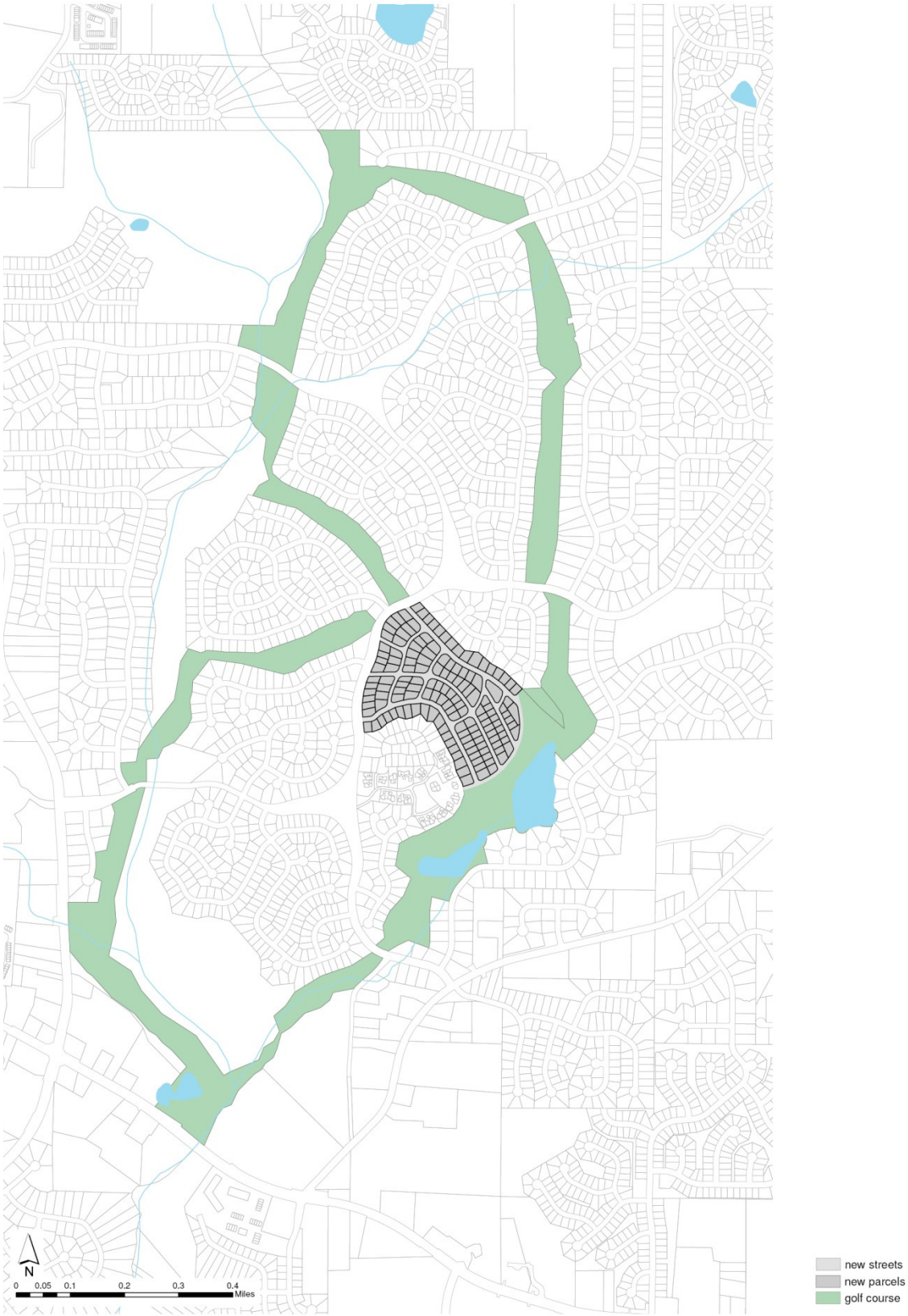


Figure 66: Subdivision plan: Shoestring : Static Tissue

Analyzing various performance metrics of these plans determines what, if any conclusions that can be drawn about retrofitting closed golf courses. The full metrics are available in appendix B. The main three metrics chosen to analyze the performance are the ratio of streets to buildable lots, the ratio of built area to buildable lots and the ratio of developable area to buildable lots.

The ratio of square feet of streets to number of buildable lots is a metric for how efficient the street network is. If the street network is compact with many lots fronting the streets, the ratio will be lower. However, if the street network is inefficient with only a few lots fronting the street then the ratio will be higher. A higher ratio means that the developer is spending more money than is optimal on infrastructure such as pavement, sewer and electrical.

The ratio of built area to number of buildable lots is a metric for how optimized the lots are for the development. Odd shaped, irregular parcels take up more area than regular, rectilinear parcels. Lower ratios are better because they correlate with a more efficient subdivision plan.

The final metric is the ratio of developable land to buildable lots. The developable land is the area in orange in the suitability analysis maps, which can be found in the previous pages and in appendix A. When purchasing a closed golf course, a developer can negotiate a lower price for the land that is too steep to build or in a floodplain. However, the developer will probably have to pay full price for the remainder of the land. Therefore, to get a good return on the purchase, the developer will want to build on as much land as possible. The ratio of developable land to number of buildable lots illuminates how well a

subdivision plan is able to take advantage of land not in a floodplain and land that is flat.

The boxplot shown in Figure 67 is a graphic representation of how well each type of golf course performs on these measures. Core golf courses perform the best, followed by double-fairway and shoestring golf courses. As discussed in earlier in this chapter, core golf courses are most amenable to development because the land is already compacted and assembled. Shoestring courses are the most difficult to subdivide and develop because the parcels are long and thin.

Therefore, when cities, banks or private developers are considering golf course retrofits, they should consider that core golf courses will be the best performers based on these metrics.

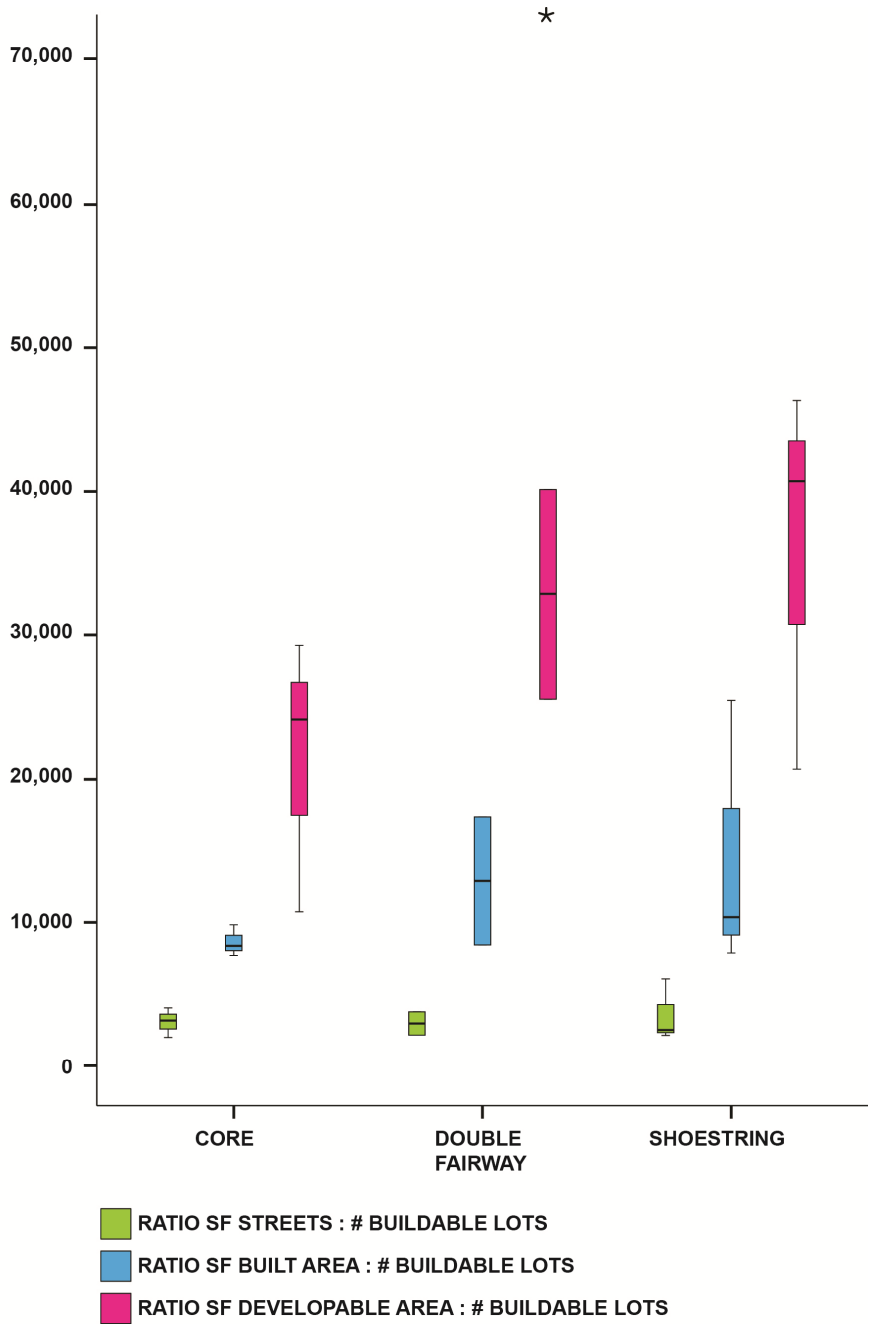


Figure 67: Performance metrics of subdivision plans

CHAPTER 12: POLICY IMPLICATIONS

Closed golf courses surrounded by public right-of-way are easier to develop both morphologically, as discussed in the previous chapter, and politically, because they do not share property lines with single-family homes. Courses surrounded by non-single-family residential parcels but little public right-of-way are difficult to redevelop morphologically, but politically are also still relatively simple. Courses with minimal public right-of-way that are also bordered by single-family residential are difficult from both a morphological standpoint and a political standpoint.

The first two categories are more issues of urban design. To deal with these types of closed golf courses, municipalities should have urban designers subdivide the land according to the criteria set for in Chapter 11, then adopt the subdivision plan and include it in official plats. Because this is a fairly straightforward, if not always simple process, the remainder of this chapter on policy will focus on the final category.

As explored in the chapter on law cases, owners of golf courses want to develop them to make money and recoup any loses they suffered when the golf industry imploded. Efforts to develop can come as a nasty surprise to surrounding residents and spur years of expensive litigation.

A big impediment to painless golf course redevelopment is neighborhood opposition. Neighbors want the lowest density possible, preferably no density.

Local officials should try to get out in front of the opposition and organize the process instead of leaving it up to the developer or owner to fight with the neighbors. Local officials' first involvement cannot be at the zoning hearing. They need to educate the public and the developer and make sure that people with technical knowledge are on hand to offer guidance and support.

When a closed golf course exists in a neighborhood, there are three ways any potential development could proceed.

1. The No Action option

In this scenario, the municipality refuses to allow development on the golf course. In many instances, such as if the course was previously zoned as open space, the municipality can refuse to permit development and its decision would probably hold in court. The developer could hold the land and hope that the golf industry goes into an up cycle so that they could eventually reopen a golf course. This could take a while, and some developers could choose to walk away from the property. The municipality could then assume ownership and turn the land into conservation space or a park. Surrounding homes would absorb the 11.7% loss in value of their homes.

2. Fully redevelop the closed golf course

This option is most profitable for developers, however it is unfair to homeowners who bought homes at a premium and with the belief that they would be next to green space. Developers would make a windfall on the redevelopment. A closed golf course is not worth that much, whereas developed land is much more valuable. The developer would profit at the expense of the homeowner.

3. Partially redevelop the golf course

The key to retrofitting part of a closed golf course is that neighbors should end up better off than having a closed golf course. To achieve this outcome, community members need to negotiate with the developers. The negotiation process has the potential to be lopsided because developers have experience that community members, especially in older, less well-off communities, do not. Planners would become the facilitators at such negotiations to help make these deals happen so that neighbors do not end up the losers.

If neighbors, developers and the municipality decide to implement a golf course retrofit, a major policy decision is one of ownership: Who owns the undeveloped portion of the greenspace?

If the greenspace is in a floodplain, there are several options:

A. The local municipality assumes responsibility for the land
B. It is deeded to adjacent neighbors with an easement
C. It goes to a conservancy, neighborhood association, or community development corporation to hold in common.

The end effects of these options are the same: the land is conserved.

If the greenspace is NOT in a floodplain, there are also several options:

A. It is deeded to adjacent neighbors.
B. It is held in trust by a conservancy, neighborhood association, or community development corporation.
C. It is purchased by the local municipality.

The end effect of these options is not the same because if the land is deeded to surrounding neighbors, the land is private and could be fenced off rendering it inaccessible. If the local municipality purchases this land it must be publicly accessible. Adjacent neighbors may be uncomfortable being next to public land. If a neighborhood association or other organization holds the land, it can restrict or allow access at will.

Policy makers and neighbors should fully understand that by developing a closed golf course, the developer is making a windfall. A closed golf course's economical value is effectively zero if the course is zoned for open space or recreation space.

The developer should contribute some money to greenspace development or preservations. Upfront costs for implementing trails, maintenance and liability insurance are all costs that will accrue if the land is privately held. If the developer does not want this responsibility, he should contribute money to a fund to help pay for insurance and maintenance. The developer should also turn the land over to a nonprofit and write that donation off his taxes.

The following equation can be used to calculate how much a developer should contribute to a fund so that the non-profit can fund the expenses with the appreciation of the fund.

Sum=(1/%fund_growth)(annual_ maintenance + annual_liability_insuarance_premium)

This equation takes into account the projected growth rate of the fund and the amount of money a homeowners' association or a community development organization would need to operate the land.

Upfront, planners should do their own investigative work, land appraisals and development costs. They should assess the land value and make sure it is realistic. Often a closed golf course is appraised as if it is still operational and profitable, and therefore the appraised value is abnormally high. Planners should look at other greenfields in the vicinity and compare per-acre costs to get a realistic number. Reassessing the land value to a lower and more realistic number would stimulate developer cooperation.

CHAPTER 13: IN-DEPTH ANALYSIS | HIDDEN HILLS GOLF COURSE

The Hidden Hills Golf and Country Club closed in 2005. Since then, neighbors have struggled with many of the problems discussed in the Chapter 4 literature review including trespassing, overgrowth and illegal dumping. In 2010, a group of community members dedicated themselves to revitalizing their community. In 2011, with the help of the Atlanta Regional Commission, they implemented the Greater Hidden Hills Overlay District that put forth design and land-use guidelines for the area (Dept.).

In 2013, several members formed the Greater Hidden Hills Community Development Corporation, which is dedicated to economic revitalization in the area. One of this organization's main focuses is to attract development of the188-acre golf course land.

The overlay has a tier system, with the golf course land in three different tiers (Dept.) (Figure 68).

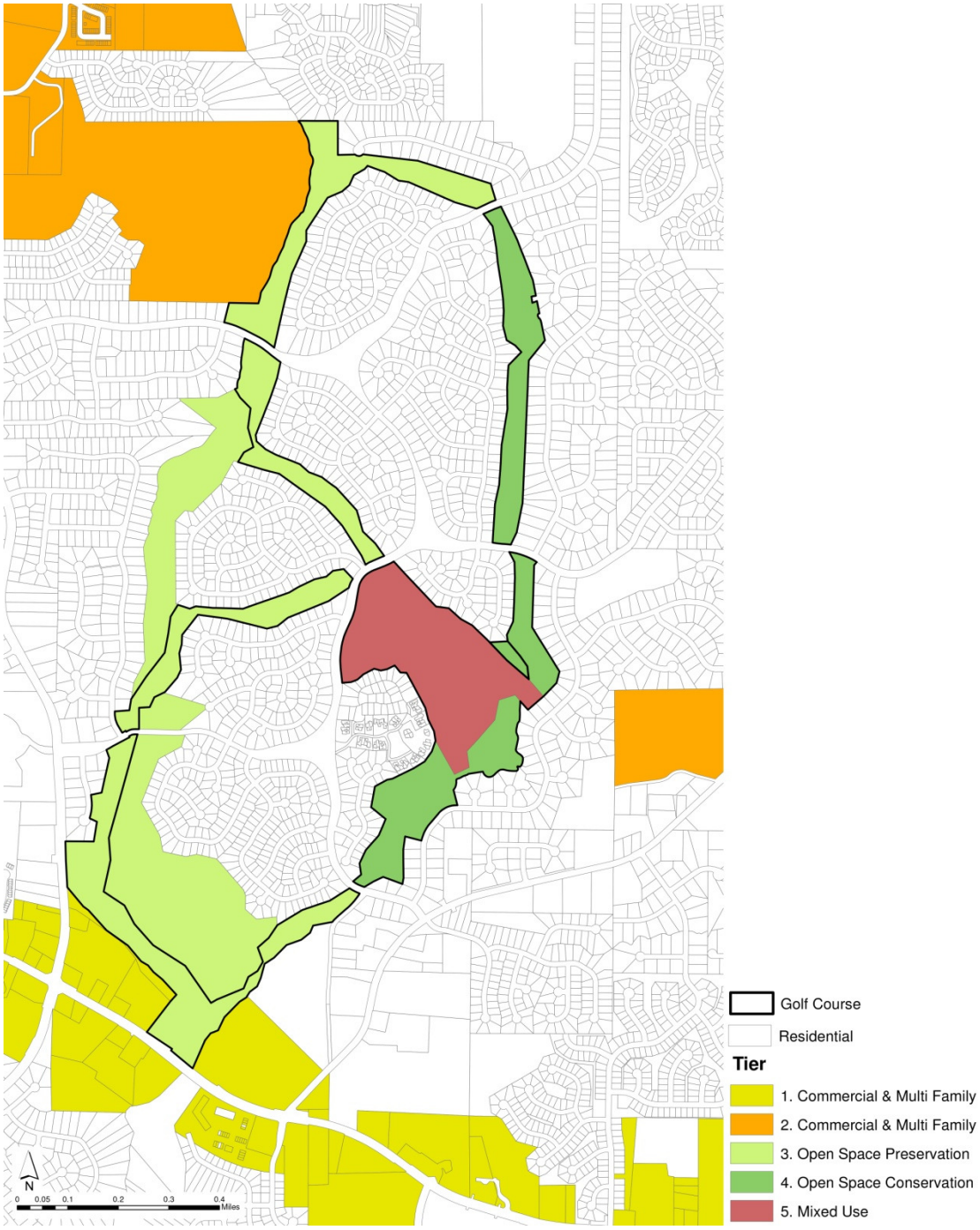


Figure 68: Tier System in Overlay Plan

The portion of the golf course subdivided in the previous case study section fits within Tier 5 (Figure 69). This proposed subdivision plan has 380,008 square feet of public right-of-way, 147 buildable lots and a total built area of approximately 27 acres. The lots average 0.2 acres each.

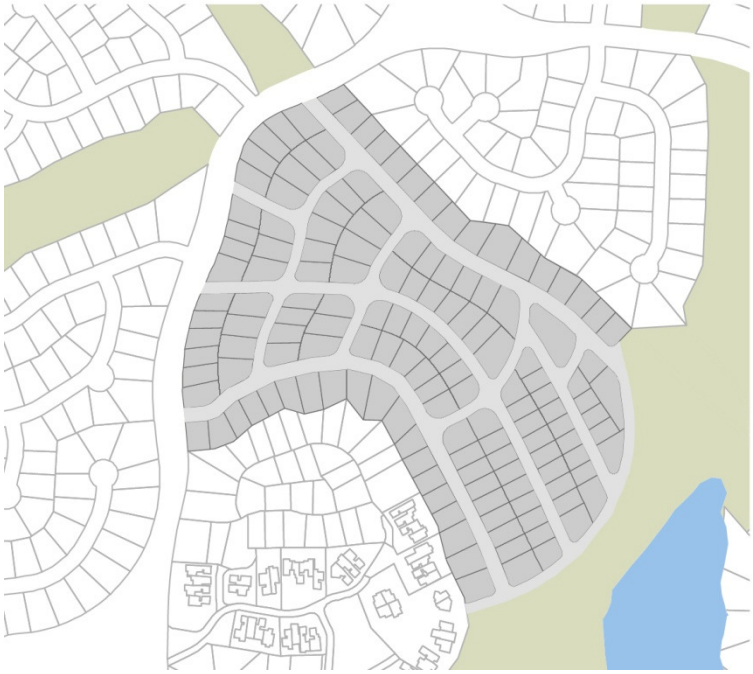


Figure 69: Proposed Subdivision Plan

The overlay plan defines Tier 5:

> *"Tier 5 is a neighborhood mixed-use area which allows for increased density, increased building heights, and additional permitted uses within a mixed-use environment. The purpose of Tier 5 is to allow increased development in an area where it is needed while preserving/conserving property within Tiers 3 and 4.(Dept. 5)."*

The overlay plan specifies that "Residential use in a mixed-use development shall not exceed seventy (70) percent of the total development floor area. (Dept. 18)" It also dictates that single-family homes will only be allowed through a special use permit (Dept. 20).

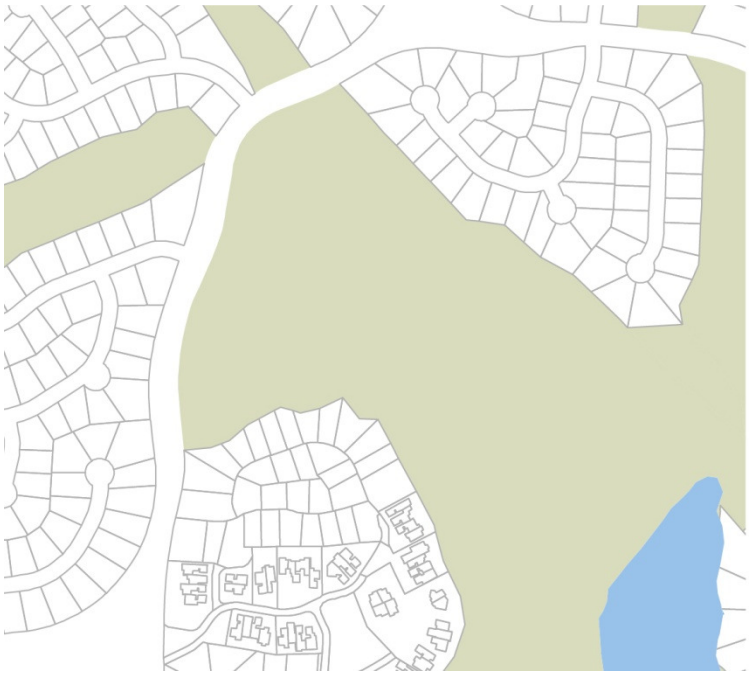


Figure 70: Left as Greenfield

Before getting too caught up in any potential use, a potential developer would first need to purchase the land. Currently, the 184-acre course is appraised at $2,388,577. The large parcel that houses the country club is approximately

$15,200 an acre, with the other parcels at approximately $11,300 an acre. This appraisal is much too high. An undeveloped greenfield a few miles away in DeKalb County, with a creek and similar level of access, is approximately $2,600 an acre. The aging-in-place community directly across a major arterial is appraised at $12,000 an acre. Taking these numbers into consideration, it can be assumed that the appraisal of the golf course parcels is factoring in commercial value as a golf course. As explained extensively in Chapter 2, a downturn in the golf industry means many former golf courses are no longer economically viable. The current owner of these golf course parcels may want $2 million for the property, but the worth of these parcels is closer to $500,000.

What happens if no developer buys the land because he knows it is priced too high (Figure 70)?

In the highly unlikely chance that the area creates new demand for a golf course, the land could revert back to that use. The county could also take it over and make it into a park. Officials would probably ask the owner to donate it to the county and take a tax write-off. This option is ignoring the reality that many municipalities are trying to downsize and do not want to take on extra park space to develop and maintain. However, there is public benefit to having accessible, usable greenspace in a community. A municipality should analyze an area and determine if it is park rich or park poor. Park rich area tends to have between 6.5-10.5 acres of parks per 1000 people. DeKalb County as a whole has about 9 acres of park per 1000 people. The Greater Hidden Hills area has less than this amount—about 7 acres of park per 1000 people. Turning the former

Hidden Hills Golf Course into a park would give 9.2 acres per 1000 people in this area.

The issues of who owns the land still arise with other more natural uses. In the event the county does not want to take the land as a park, a homeowners association or community development corporation could take ownership of it. They would still need money for maintenance and insurance; uses like a golf course, community gardens, playground, or other passive recreation would drive up the cost of maintenance, upkeep and insurance.

An analysis of the numbers shows why the land is currently priced too high. No developer would buy it for $2 million. Several case scenarios prove this point.

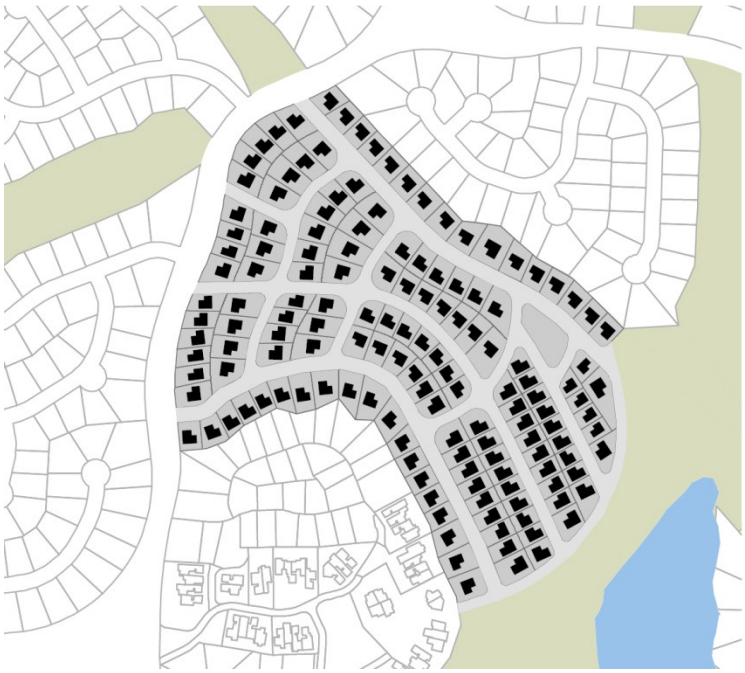


Figure 71: Single-Family Homes—Base Case

For a base case, put single-family residential on the 147 parcels in the Tier 5 area (Figure 71). Putting single-family homes on these and selling them at the Hidden

Hills average appraisal rate of $75,000 per home nets $11,025,000. Assuming a 20% return, the developer takes in $2,205,000. That is a profit of only $205,000. This amount is hardly worth the effort. If the developer only had to pay $500,000 for the land, then he would get a profit of around $1.7 million, which is certainly better.

Figure 72: Maximum Density

For an extreme case, what would happen if a developer maxed out the allowable density (Figure 72)? A developer could get as much as 1.2 million square feet on the site, with a floor area ratio (FAR) of approximately 2.7. The development would have 5 levels in the center blocks with two levels on the peripheral blocks. Assuming $100 per square foot construction costs, a developer would spend over $120 million building the project over several years. The developer might expect to make a profit of $24 million over a period of several

years. However, this is not a realistic scenario because the Tier 5 portion of the Hidden Hills Golf Course is not on a major road, nor is it near a transit station. It has generally low connectivity to the rest of the neighborhood. It is also 25 miles away from the city center and not near other intense development. Therefore, it is unlikely that high density retail and residential spaces would be absorbed onto the market.

A more realistic scenario would be lower-density development.

Figure 73: Modest Density-Aging-In-Place

This area could support an aging-in-place community with nursing home care and health care, which would satisfy the commercial requirements (Figure 73).

In this alternative, the development of an aging-in-place community (which would count as a commercial use) could include 880 aging-in-place units including 51 one-level, low-supervision units on blocks D and E (Figure 75), 192

four-level, mid-supervision units on blocks L and K, and 640 four-level, high-supervision units on blocks A, B, C and G. The cost to the developer would be approximately $90 million, with a profit of almost $18 million.

Figure 74: Blocks

The aging-in-place alternative also leaves room for civic spaces like a community center and other related facilities in blocks F and M. At 98,000 square feet, the construction of these facilities would cost almost $10 million. The costs could be borne by the county or a blend of government and nonprofit entities.

A detractor from the use of the aging-in-place use is that the site is not transit accessible. However, with a maintained network of trails through the golf course, seniors and other residents would be able to get to a bus stop or access the amenities like the grocery stores, pharmacies and eateries in the commercial nodes. With a large enough population, the development could also sponsor a

shuttle to these areas a few times a week. Though these amenities are out of the proscribed ¼ or ½ – mile radii, they are within reasonable biking distance (Figure 75).

Another detractor is that the site is not on a major road, therefore it has limited visibility and may have issues with accommodating extra traffic generated by the development. Entering into the community happens via S Hairston Road (Figure 76) From entrance 1, it is a 0.8 mile (2 minutes) drive with one turn.

However, according to the supply-side market overview done in Chapter 11, this area is too far away from the main transportation network and too far away from other dense development to be a viable candidate for the types of mixed use that is found in more urban new developments

Because of the community center and new residential, a strong case can be made for including a smaller nine-hole golf course on some of the land (Figure 77).

Density is set by the overlay plan at a FAR of maximum of 3.5. There are density bonuses for public and civic space (Dept. 22). This design has a FAR of approximately 0.8.

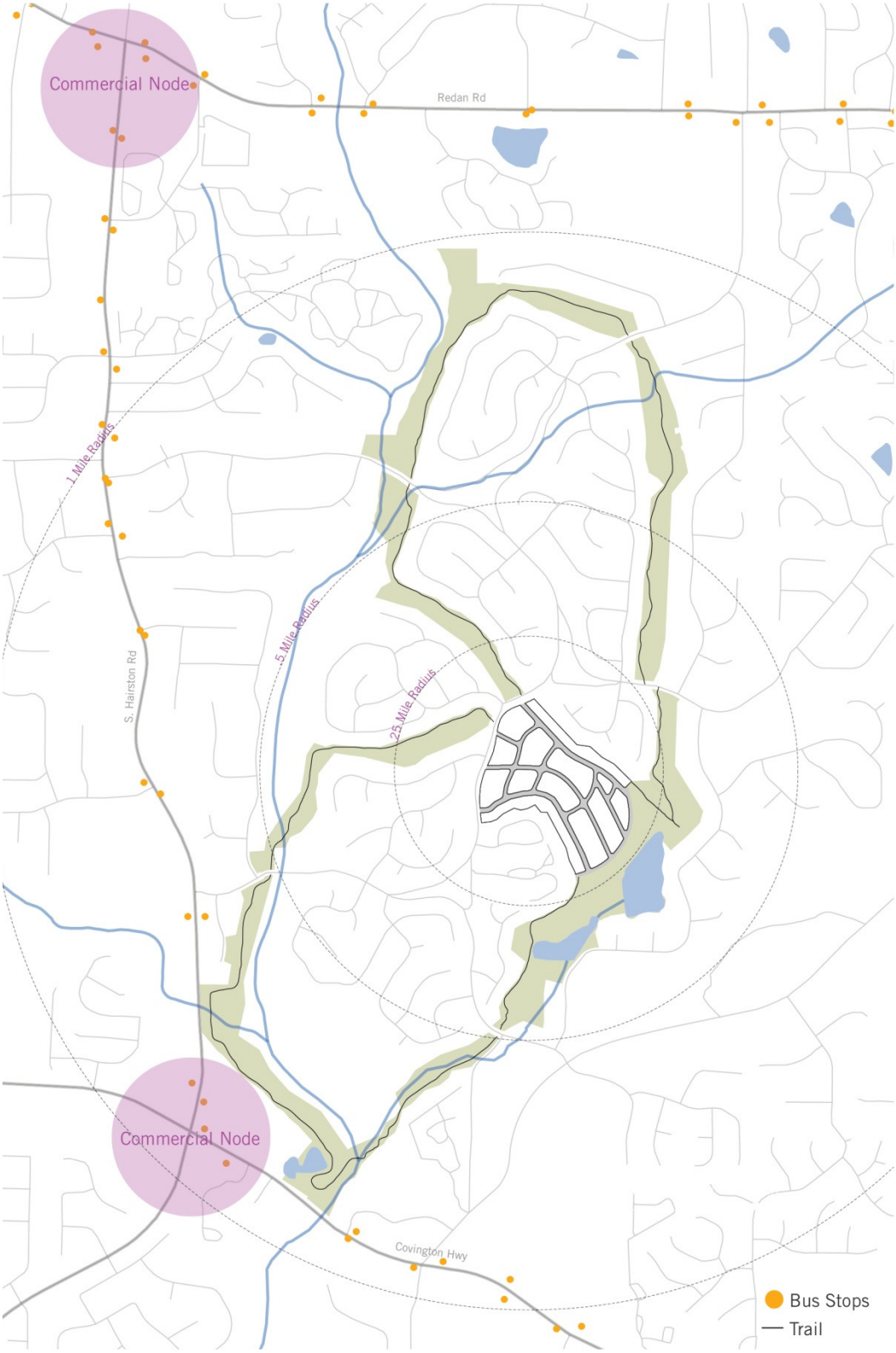


Figure 75: Connections and Accessibility

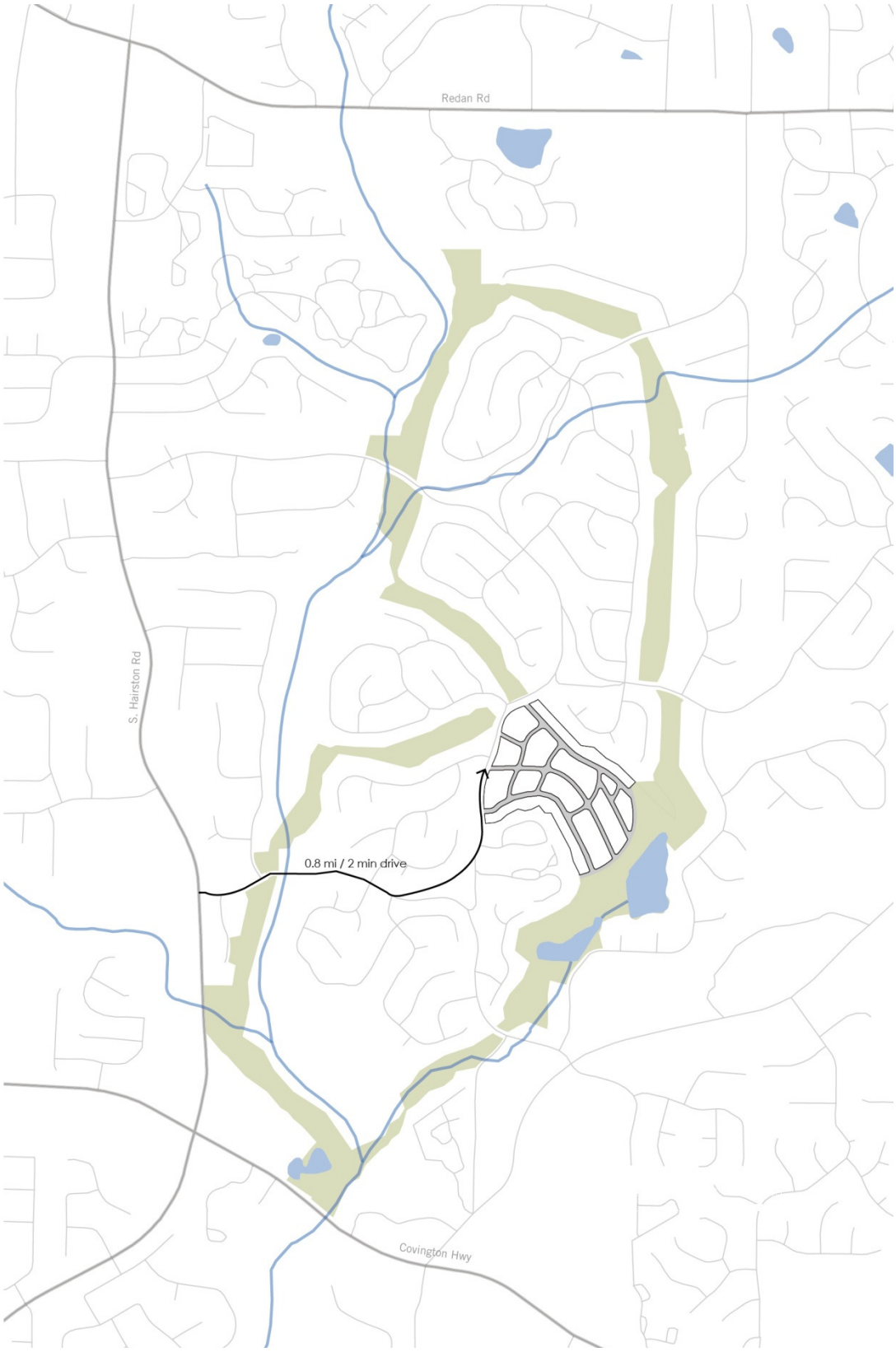


Figure 76: Entrance to Development

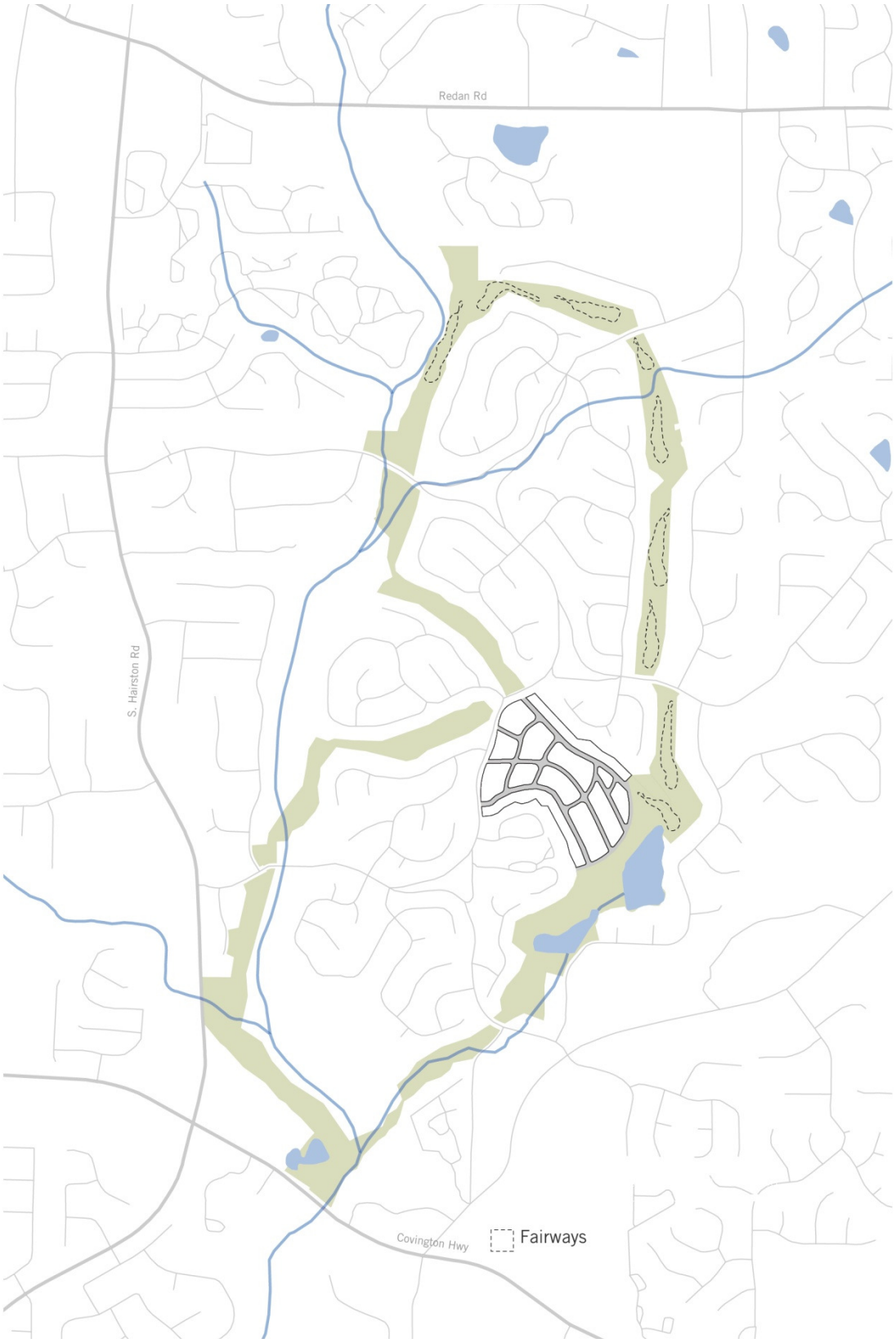


Figure 77: Shorter, 9-Hole Golf Course

Figures 78 - 80 are illustrative plans and renders of the development.

Figure 78: Bird's-eye View

Figure 79: Full Development Plan

Figure 80: Plan of Built Area

Buildings heights and street sections are also dictated by the overlay plan, which are as follows:

> *"Sec. 27-730.4.21. Tier 5 Development Standards.*
> *(a) Building Setbacks and Separations. The following requirements shall apply to all structures within Tier 5:*
>
> *(1) Front yard setback: Minimum of ten (10) feet and a maximum of twentyfive(25) feet.*
> *(2) Minimum interior side yard setback: ten (10) feet.*
> *(3) There shall be a minimum of fifteen (15) feet between buildings two (2)stories or less in height and a minimum of twenty (20) feet between buildings and structures when one(1) of them is greater than two (2)stories in height.*
> *(4) Minimum rear yard setback: fifteen (15) feet.*
>
> *(b) Height of buildings. No building in Tier 5 shall exceed five (5) stories or seventyfive(75) feet (Dept. 21)"*

According to the plan, sidewalks can be minimum 5 feet, if there is a predominantly residential area (Dept. 29). Though the aging-in-place facility is commercial, the area would have a more "residential" character and therefore 5-foot sidewalks would be more appropriate.

This design meets the overlay height requirements (Figure 81). It has 2-3 story buildings, with minimum setbacks of 10 feet. The 40-foot public right-of-way has 5-foot wide sidewalks. This design accommodates parking with surface lots for the community center and the aging-in-place units and additional on-street parking.

Because the Tier 5 property abuts residential property, the overlay plan calls for a transitional height plane at 45 degrees (Dept. 22-23). This design located the one-level low-supervision units on lots abutting single-family residential; thus, the transitional height plane is not necessary.

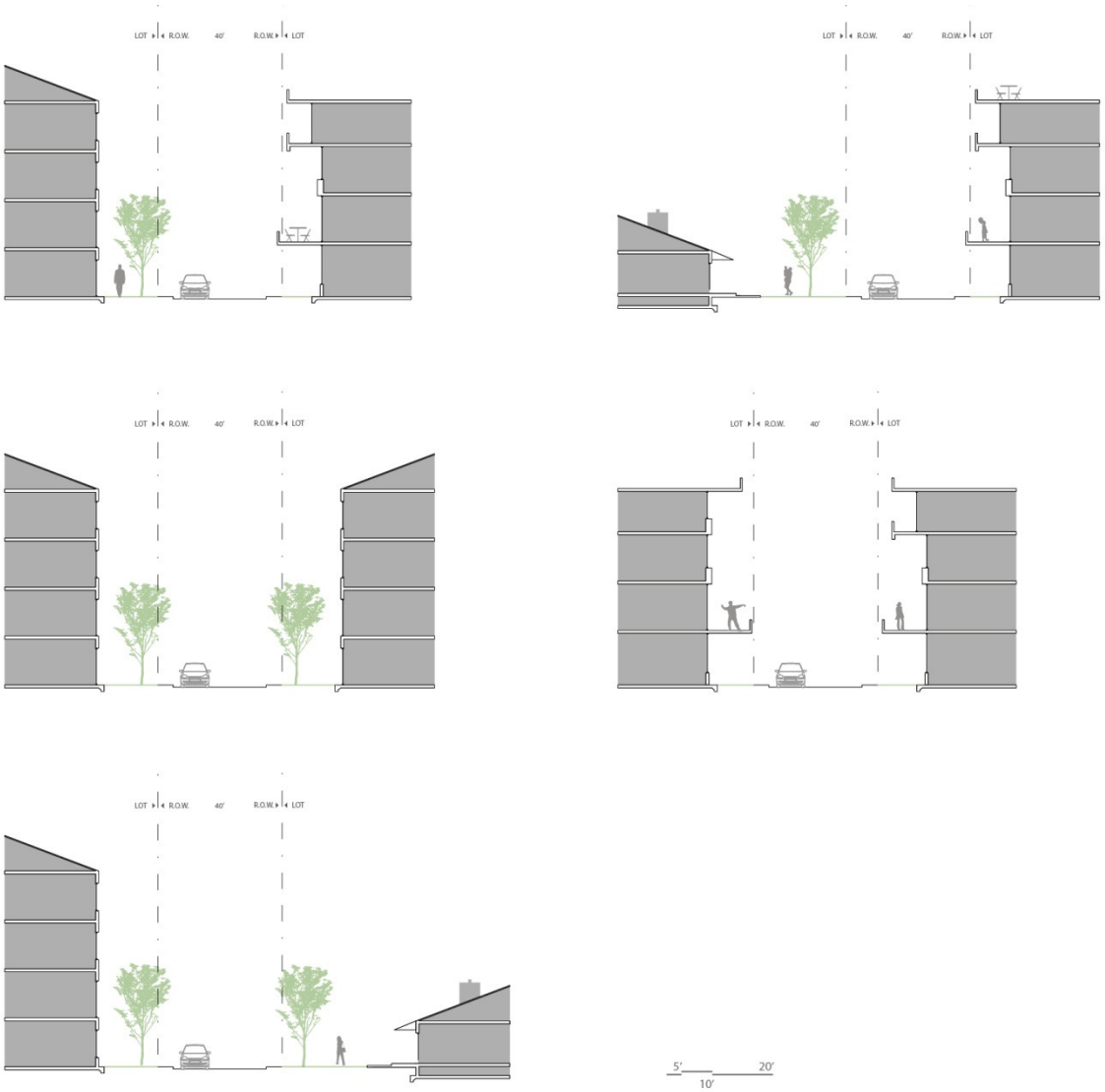


Figure 81: Variety of Street Section in Development

To fully explore the policy implication discussed in the previous chapter, Hidden Hills Golf Course again provides a good case study.

Neighbors and stakeholders have already agreed that they would like to see some development but still keep majority greenspace as outlined in the Greater Hidden Hills Overlay Plan.

The cost of implementing 10-foot-wide reinforced concrete trails is a onetime fee. The Hidden Hills retrofit would have approximately 20,000 feet of trails, so the cost would be $1.2 million.

The Greater Hidden Hills Community Development Organization has expressed interest in taking control of any greenspace. If maintenance and operations is around $25,000 per year, insurance is $2,500, and the fund has 5% annual growth then the developer needs to contribute a minimum of $550,000, based off of the equation in Chapter 12. This way developer has a profitable project, the community does not lose out, the developer gets to walk away from an unproductive golf course, and the county does not have to assume responsibility for the greenspace.

The Greater Hidden Hills overlay plan also calls for publicly accessible open space:

> *"Sec. 27-730.4.23. Publicly Accessible open space requirements in Tiers 1, 2 and 5.*
>
> *(a) A minimum of twenty (20) percent publicly accessible open space shall be provided for each new multifamily or new mixed-use development. Publiclyaccessible open space areas may be transferred from one parcel to another within overall developments that remain under unified control of a single property owner or group of owners, but must demonstrate inter-connectedness of public areas.(Dept. 23)"*

Contributing money from a fund could take care of any open space requirement for developing the property. A public-private partnership may also be applicable, in which the county contributes a percent match to the fund.

Hidden Hills is a good case study because it is the most difficult of the matrix of golf course morphologies and surrounding tissues. This in-depth look at alternatives for retrofitting shows that it is possible to retrofit a closed golf course, even one that is a difficult shape/location. However, there are several policy and market consideration that must happen before a retrofit can be successful.

CHAPTER 14: PART II CONCLUSIONS

Part II discusses the morphological and policy pieces that must be explored before conducting a golf course retrofit. Based off of the research in Part II, several conclusions can be drawn.

Conclusion One

There is one type of golf course, the core type, which is most plausible to be developed because of the configuration of the course and the adjacent parcels. A single, large parcel can be subdivided most efficiently. A core golf course is also most likely to be surrounded on all or most sides by public streets, giving more opportunities for access, visibility, and connections to infrastructure. The golf course must also be in a strong potential market and not have extreme environmental problems.

The Rolling Knolls Country Club in Illinois is a good example of a core golf course that has good access to public right-of-way and minimal slope or floodplain issues. The majority of the course can be retrofitted with a logical grid structure.

Conclusion Two

Incremental retrofits can only happen on core golf courses, but other types must be done all at once. The infrastructure costs, on which a developer makes no money, are therefore cheaper and more feasible when done incrementally on a core golf course.

In the Hidden Hills Golf Course example, the potential design could not be implemented incrementally block by block as could the design for the Rolling Knolls Country Club. The portion of the golf course that has the potential to be retrofitted is too far away from any non-single-family residential to take advantage of any existing users or development. To get the critical mass needed for the development to work it would need to be constructed in one or two massive phases. Such a phasing plan in a more secluded area is risky because the financials may or may not work out.

Conclusion Three

Because market conditions are an important driver of any development, double-fairway and shoestring courses in strong markets are feasible for development as well. However, if there is residual land left over, it dampens the feasibility. Residual land can be a result of environmental realities like floodplains or steep slopes, or a result of inherent golf course morphologies like with shoestring courses. This extra land has to be maintained in some way. It can be deeded, taken over by a municipality or financed through a conservation fund. These extra expenses for land that cannot be developed can be a major burden on some closed courses. If someone cannot develop most of the land, then they are stuck with a real problem of what to do the rest of it.

In the Hidden Hills example, approximately 85% of the course is not developable. This course has at least 27acres that are assembled in a large enough configuration to develop. Profits from such a development could potentially subsidize upkeep of the remaining acres. In the case of the Pike Creek Golf Club

over 88% of the course is undevelopable due mainly to steep slopes. Because the buildable areas are next to a public right-of-way and other development, a retrofit on this site could also follow the Hidden Hills model in which the developer sets aside an amount of money for management and upkeep of the greenspace. However, in both of these cases the developer will be entering into a project where a significant portion of the land purchased is undevelopable. Many developers may balk at these prospects.

Policy solutions should be made with an eye to helping developers and community members smoothly navigate the process, and make sure that neighbors do not end up worse off that they were with a closed golf course in their neighborhood. To this end, Part II recommends that developers contribute money to a fund to help run and maintain some large percent of greenspace in an area.

Conclusion Four

Unless a closed golf course is regionally accessible from a transportation perspective, it is not good for much except single-family residential or park/civic space. Many golf courses were built in conjunction with single-family residential development. These neighborhoods, in many cases, are located several miles away from a rail station or an interstate exit. While it would be nice if all suburban retrofits could encompass some form of mixed use or town center feel, for many closed golf courses, their context in the regional transportation network makes this unlikely. In the case of the Hidden Hills golf course, the overlay plan (that got significant input from community members) envisions mixed use residential,

commercial and office in the Tier 5 area of the course. Such high-density mixed use is not feasible due to the situation of the Hidden Hills golf course in the transportation network. The golf course is not along a major road, and it is 3.5 miles from an interstate exit. However, because of low housing values and excess stock due to the real estate crash, building single-family homes on the property is also not feasible. An aging population and a successful aging-in-place facility less than a mile away from the closed course may mean that the closed golf course could support an aging-in-place development on the property.

CHAPTER 15: CONCLUSION

Design is not dictated by policy. Inherent morphological qualities should drive decision, not what uses people want. The market and regional context is important, however, and will dictate development.

The problems discussed in Part I can only be resolved by examining each specific closed golf course, including real estate finance, legal issues, regulatory matters, and neighborhood negotiation. The key is to understand the physical differences of the golf courses, their associated development, and the surrounding context.

This thesis has introduced readers to problems plaguing closed golf courses and surrounding properties. It has also provided a guidebook of how to deal with closed golf courses.

Closed golf courses hold the potential to both attract new development into struggling areas and to provide usable, attractive greenspace in these areas.

Courses in urban areas are low-hanging fruit and are no-brainers for use as parks or dense development. There will only be a net positive for the community. Golf courses in suburban areas, especially those that are double-fairway or shoestring types are a much more difficult problem to address.

Golf courses in suburban residential communities were embedded in a physical morphology that at its essence is designed to be exclusionary. The ever-present

dendrite street pattern is most effective for a defensive position because there is only one entrance to guard as opposed to a grid pattern which has multiple points of entry. This street pattern goes hand-in-hand with static tissue and the identical types of single-family homes. Now that these suburban developments have succumbed to the harsh realities of the golf industry and, in many cases, become older, browner and less affluent, that physically embedded exclusion is a real hindrance to any real development.

In the epilogue of *Retrofitting Suburbia,* Ellen Dunham-Jones writes that "instead of continuing to expand the edges of our metropolises, it is far more sustainable to redirect growth inward where it can redevelop existing—but poorly performing—areas into sustainable places" (Dunham-Jones).

Resiliency, both environmental and morphological, is an important piece in successful suburban retrofits. Environmental resilience could result from simply closing the golf course because the chemicals used on golf courses are so detrimental to the ecosystem. Resilience would also result from retrofitting the suburban golf course with an urban structure that allows for a variety of uses both now and in the future (which one cannot predict). This retrofit assumes that the golf course is along major roods and/ or near transit are also good candidates (providing there are no extenuating environmental circumstances. One would not only retrofit closed golf courses, but also strip shopping centers, large malls and under-utilized office park.

There are around 2,400 closed golf courses in America—many of which are in suburban areas. They can play an integral role in providing opportunities for such retrofits and revitalizing communities.

However, many suburban golf courses are at a disadvantage compared to the case studies cited in *Retrofitting Suburbia* because they are surrounded predominantly by static tissue. As discussed in previous chapters, static tissue is almost impossible to retrofit, hence the nomenclature.

Especially when a closed golf course is far from the regional transportation network, single-family housing or a more natural use may be the only solution. This is not to say that a closed course has to be converted into parks or single-family residential, only that it is the more realistic scenario.

The Greater Hidden Hills Community Development Corporation is actively pursuing developers to develop an aging-in-place community with a resilient grid structure in place. In the future, should demand in that area increase, or if the municipality increases connections to the site, a flexible morphological structure will already be in place to accommodate any changes in use or density.

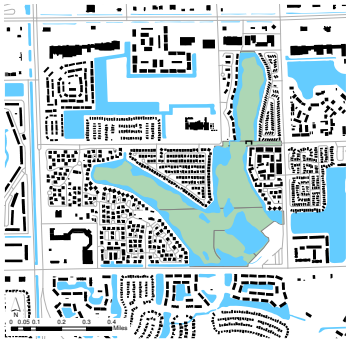
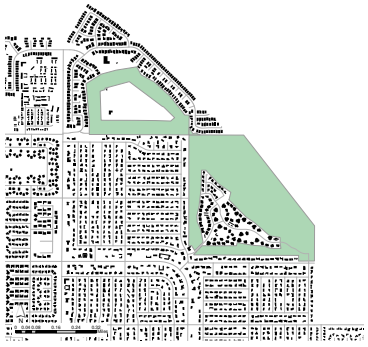
Golf courses were originally designed to be a pleasant, convenient way for people to experience exercise. In Scotland, people could play a few holes while walking to work. By the start of the 21st century, golf had become synonymous with the bloat and sprawl of suburbia. By smartly retrofitting closed golf courses, designers and planners can create more resilient suburbs that are mindful of the

environment, set up an urban framework that will accommodate future growth or development, and may even include a round of golf.

APPENDIX A

IN-DEPTH GRAPHIC ANALYSIS

Table A-1: Case Study Matrix

	Resilient	Campus/Elastic	Static
Core			
Double Fairway			
Shoestring			

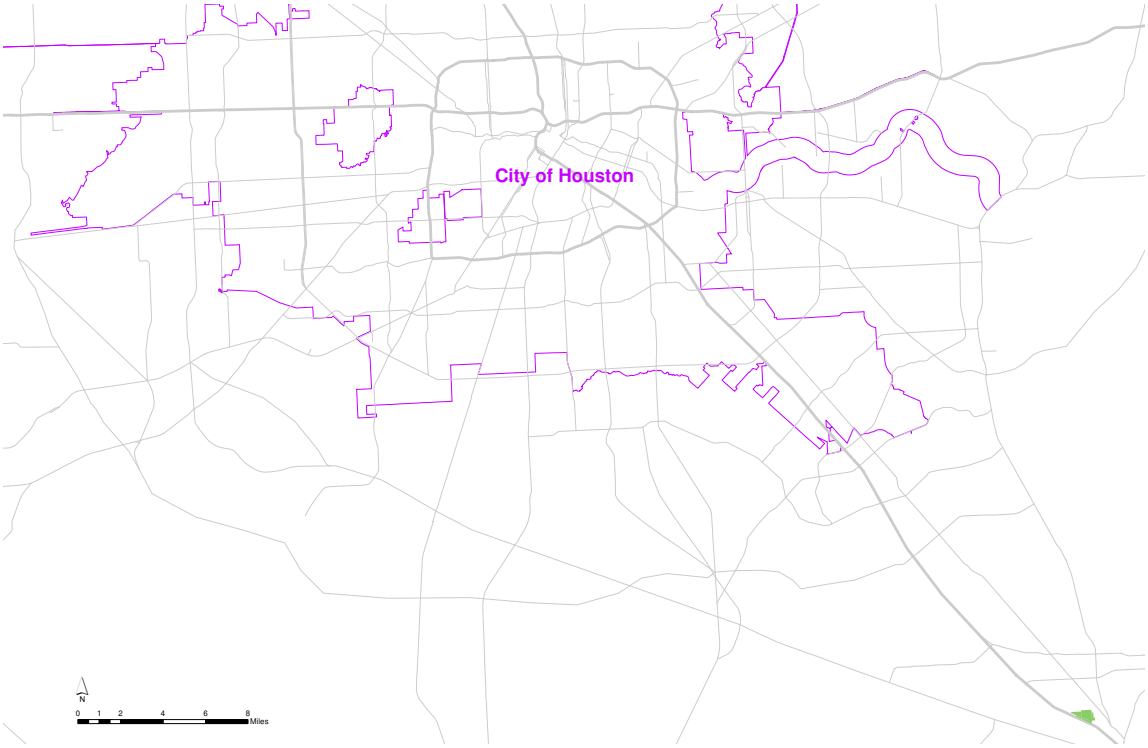


figure A-1. Regional Context: Ex-Urban

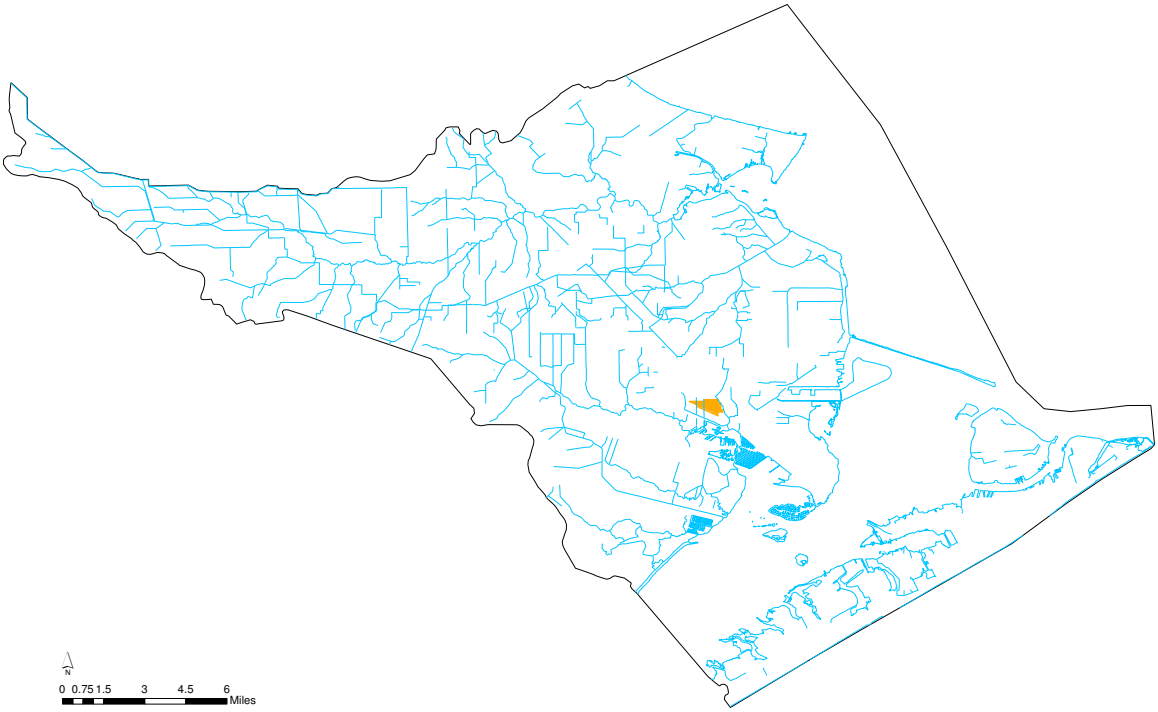


figure A-2. Bottom of Watershed

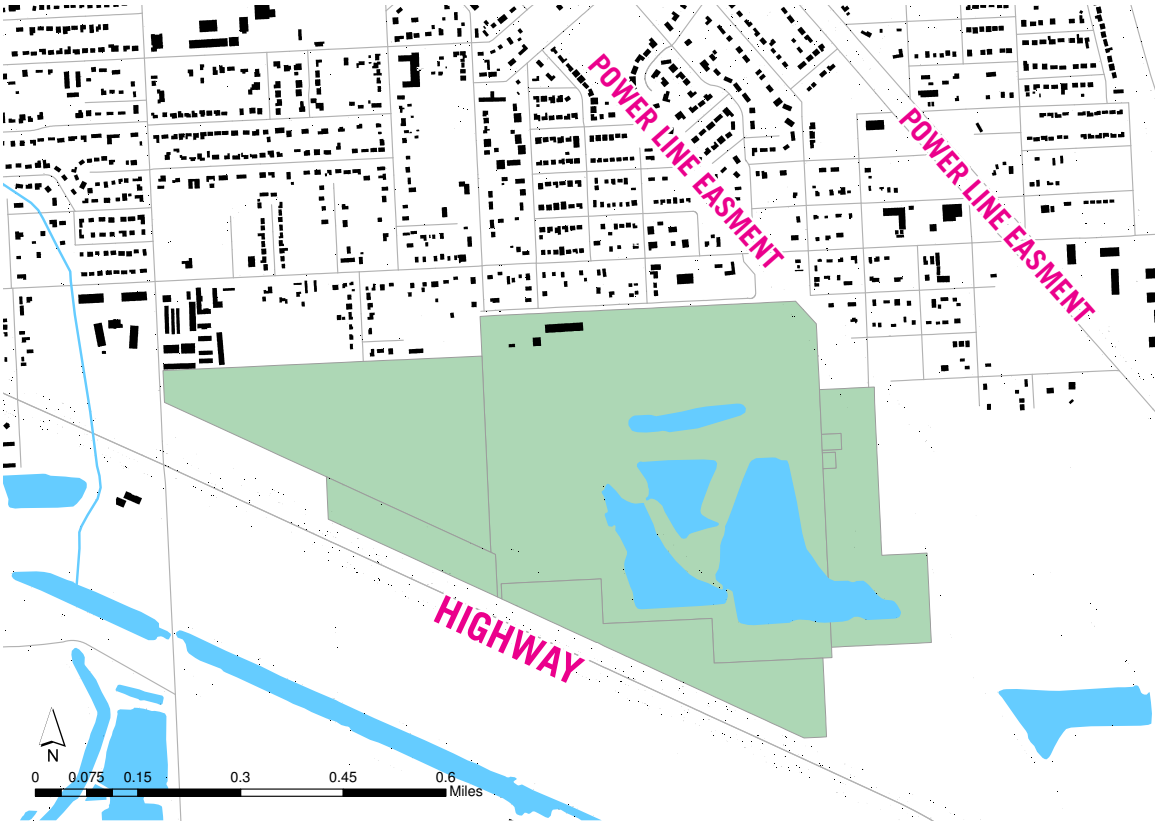


figure A-3. Buildings and Centerlines

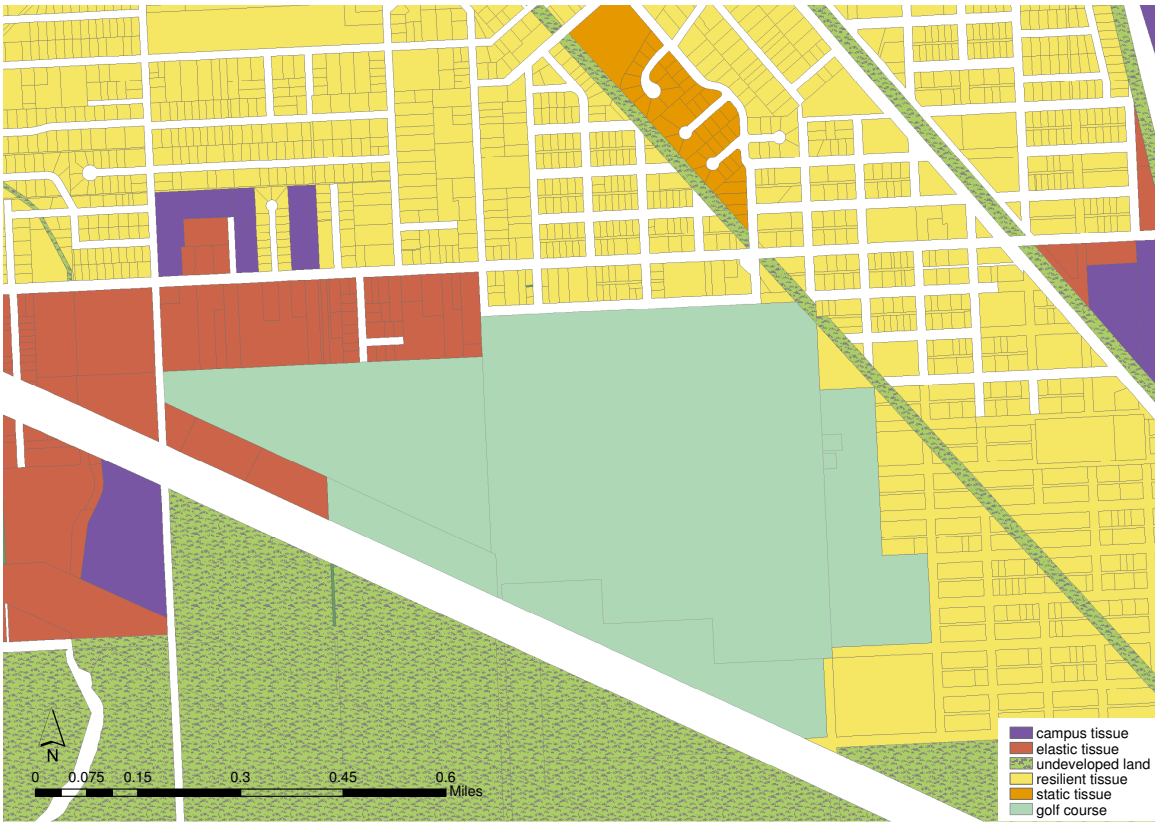


figure A-4. Tissues

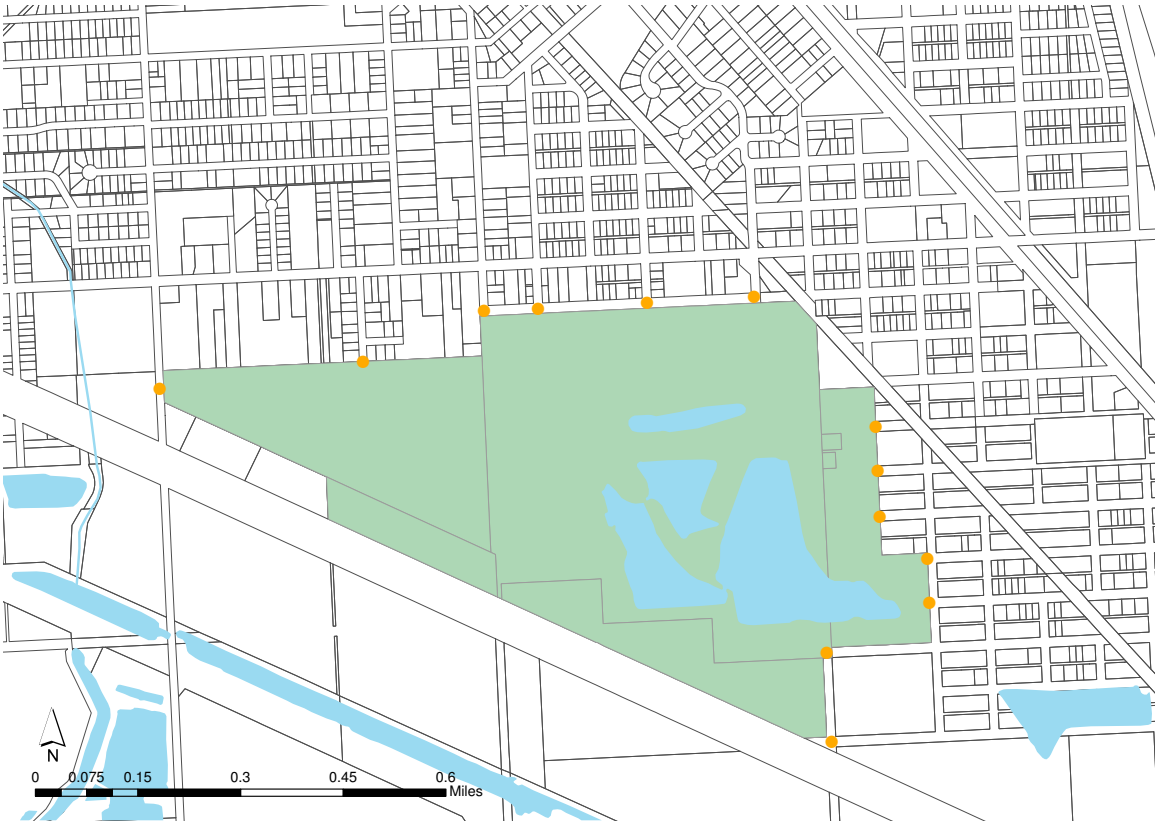


figure A-5. Access Nodes

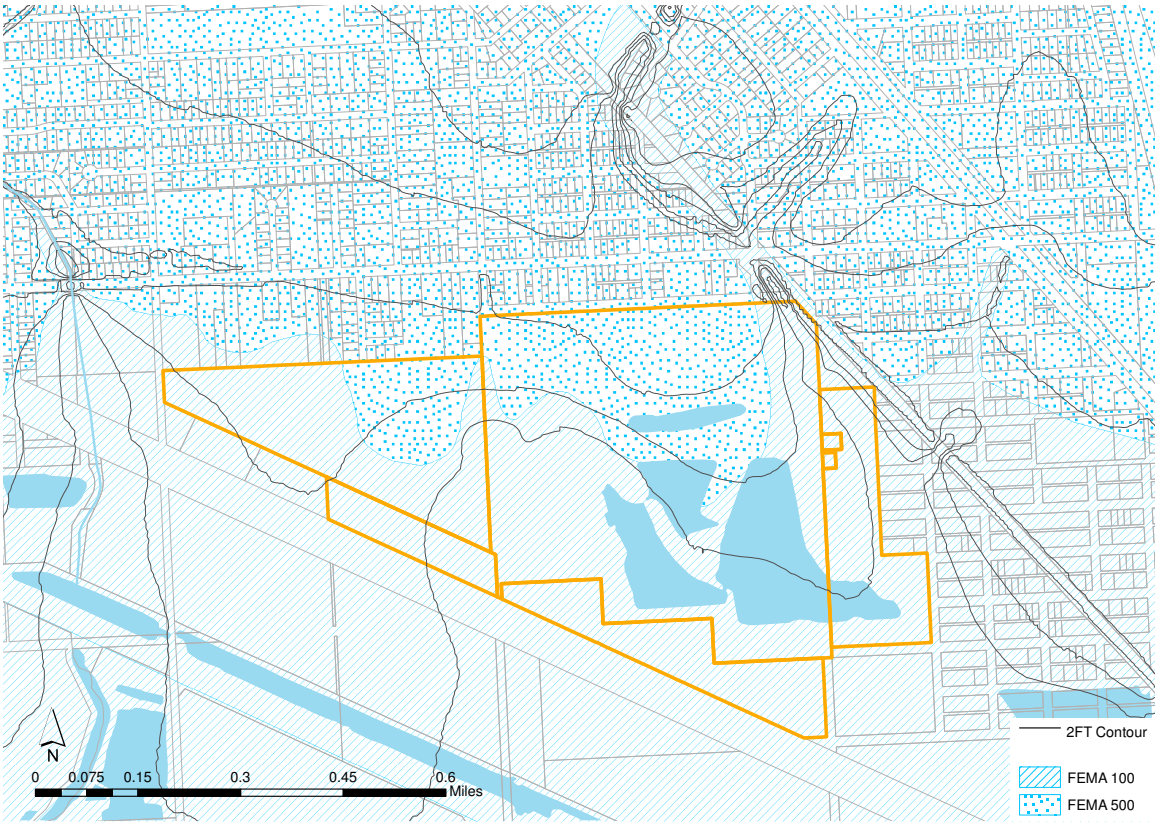


figure A-6. Floodplains

figure A-7. Slope

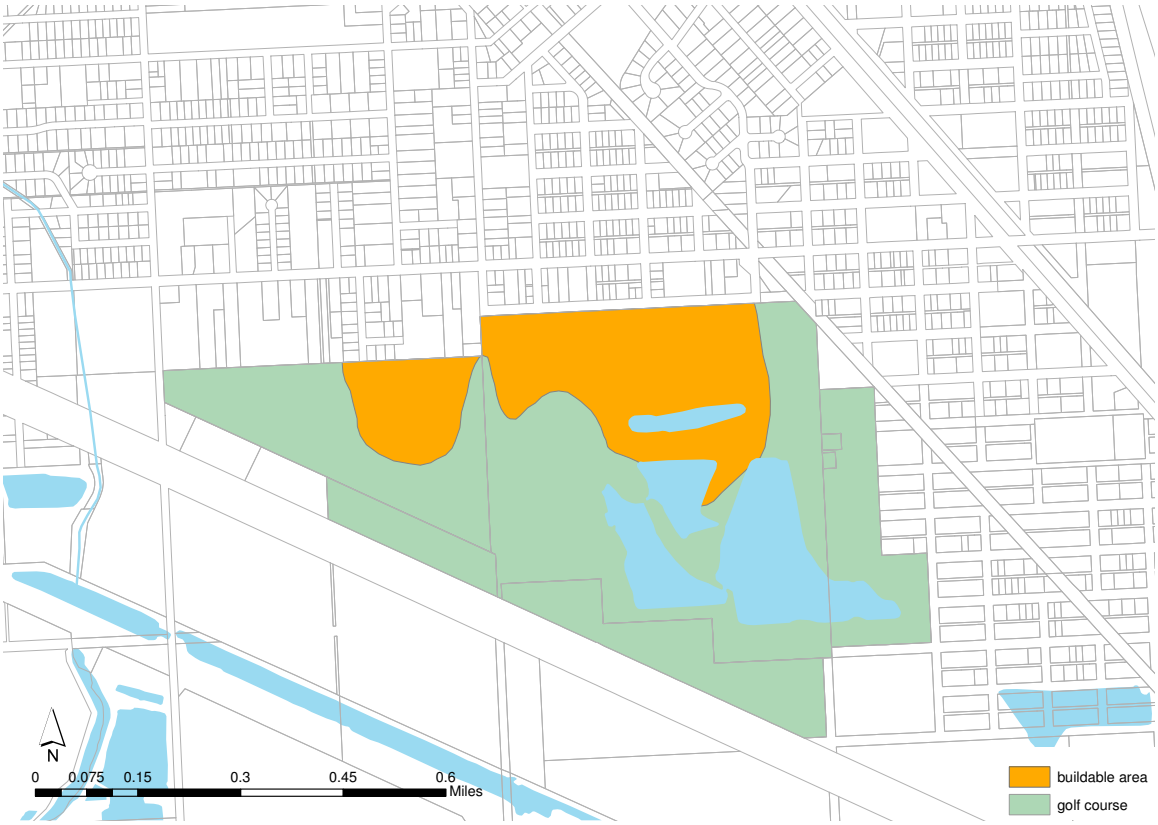


figure A-8. Suitability Analysis

figure A-9. Subdivision Plan

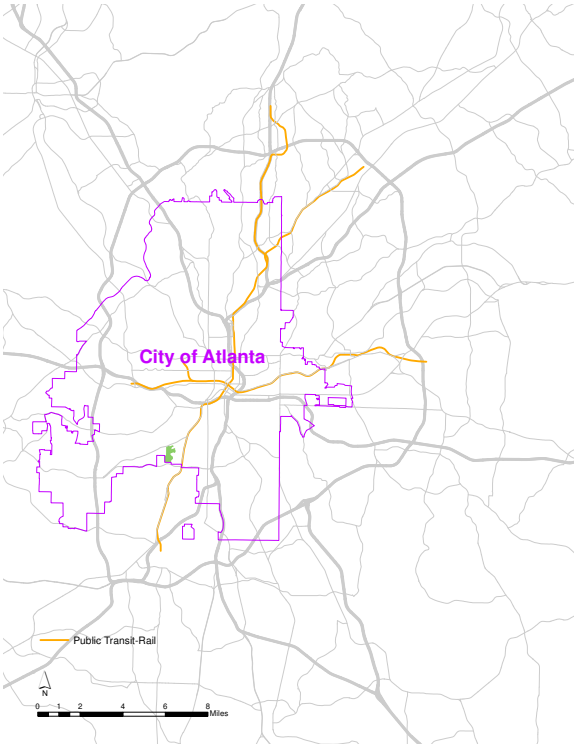


figure A-10. Regional Context: Urban

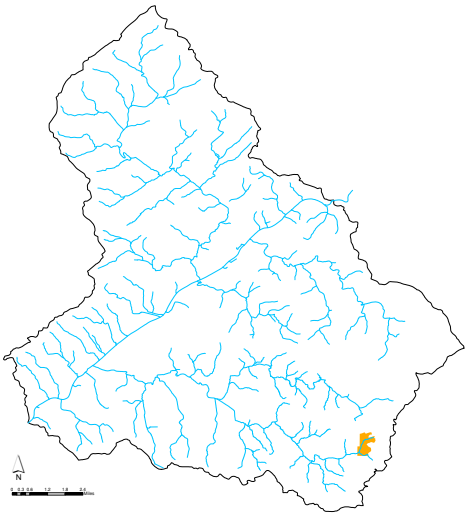


figure A-11. Watershed

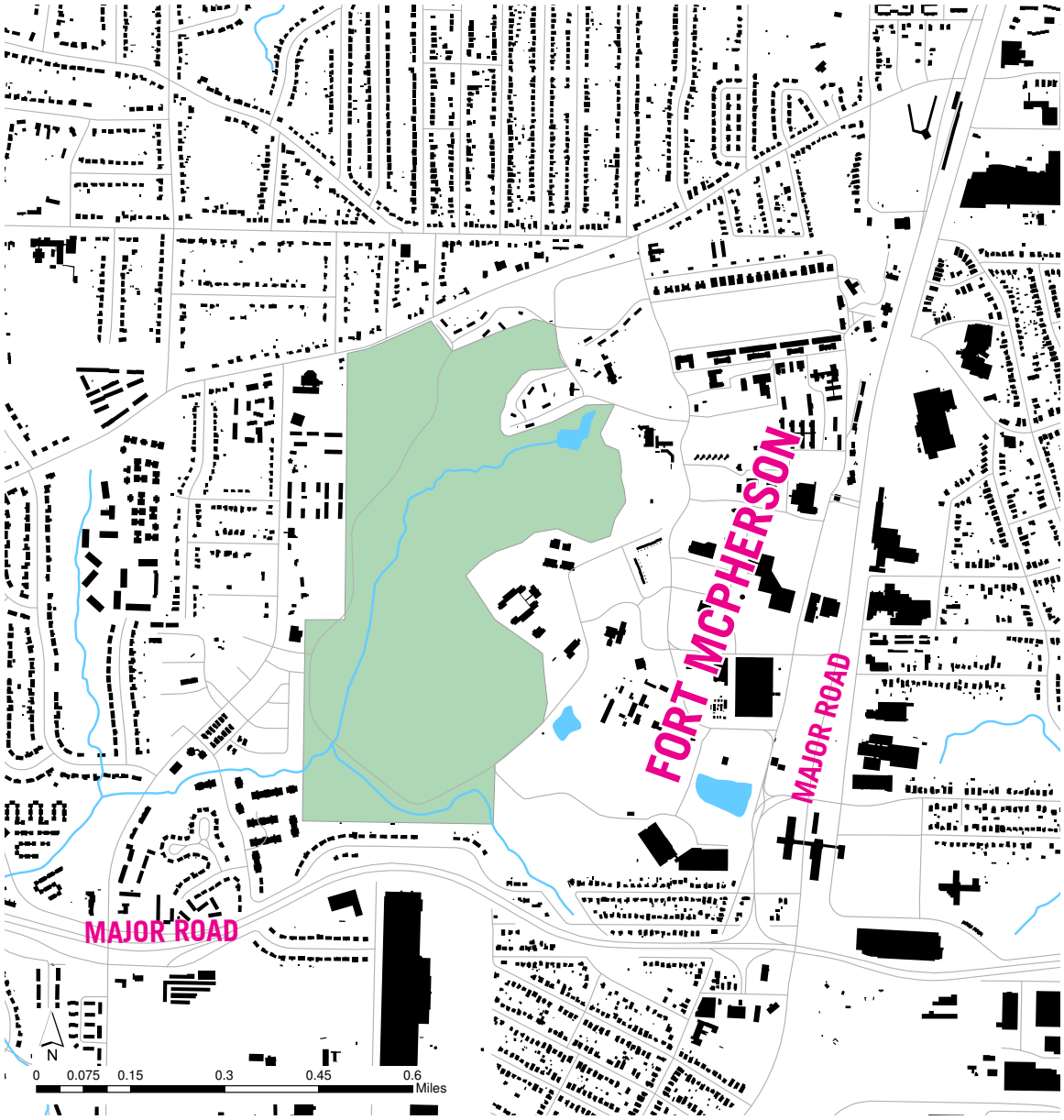


figure A-12. Buildings and Centerlines

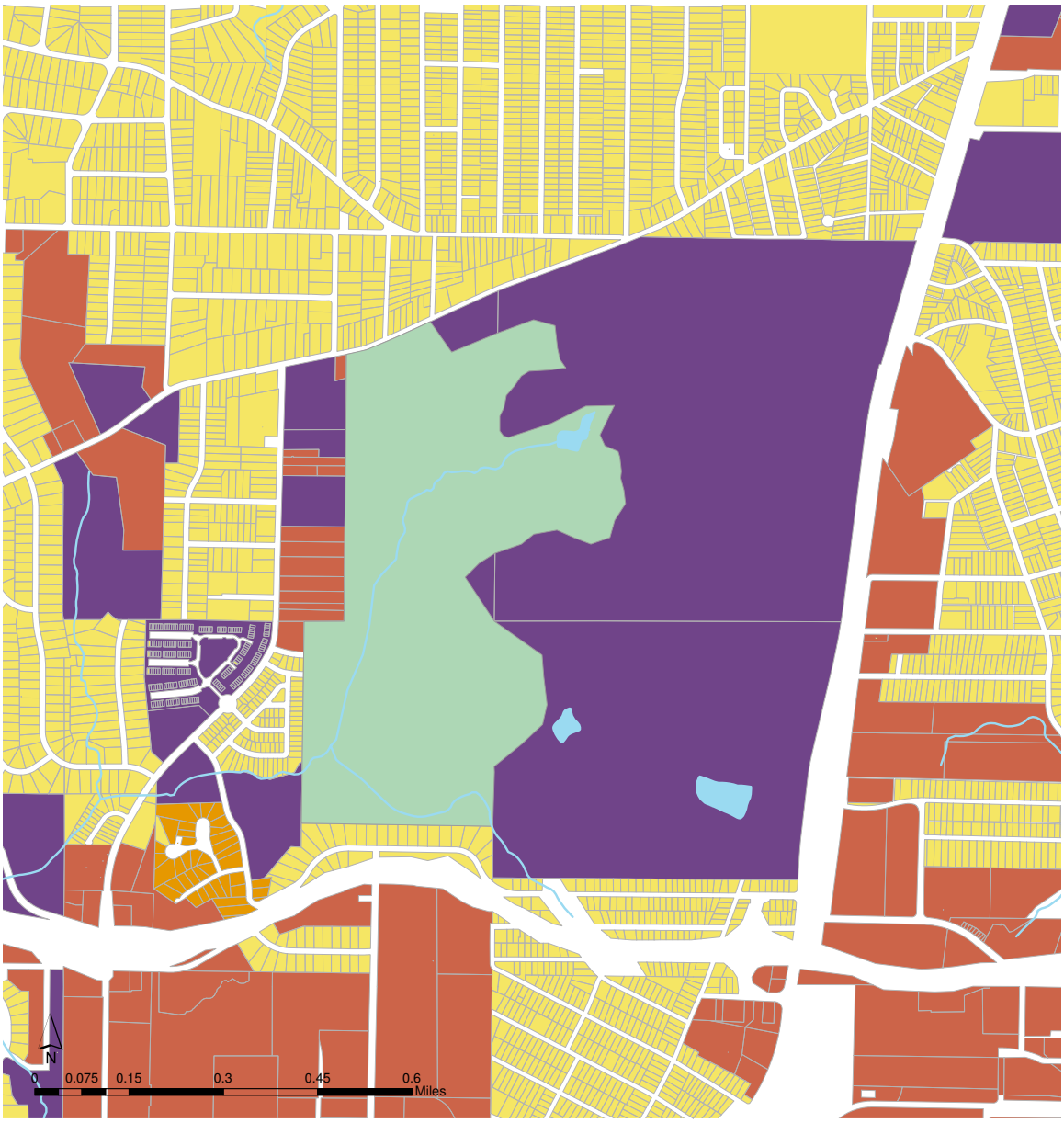


figure A-13. Tissues

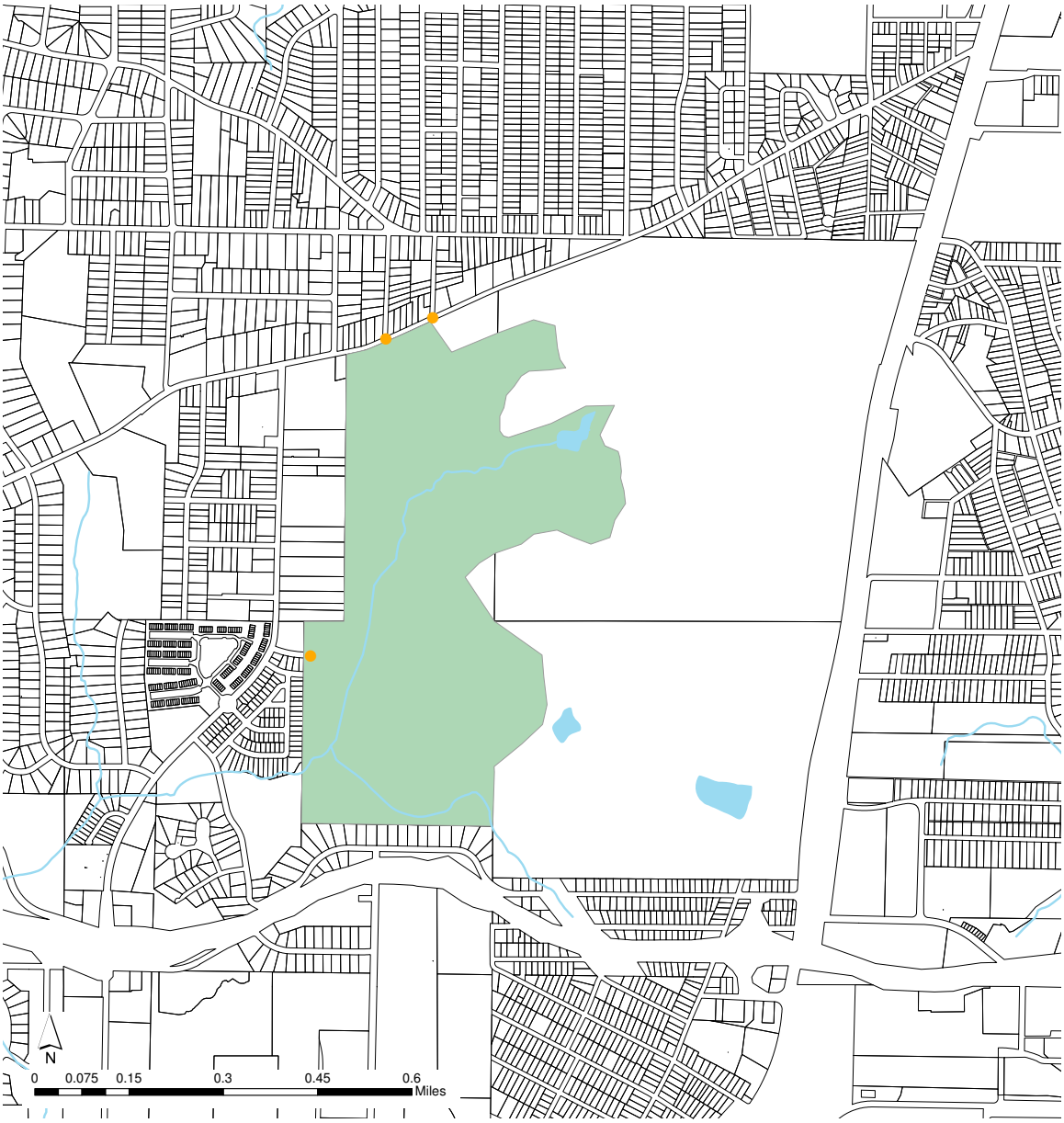


figure A-14. Access Nodes

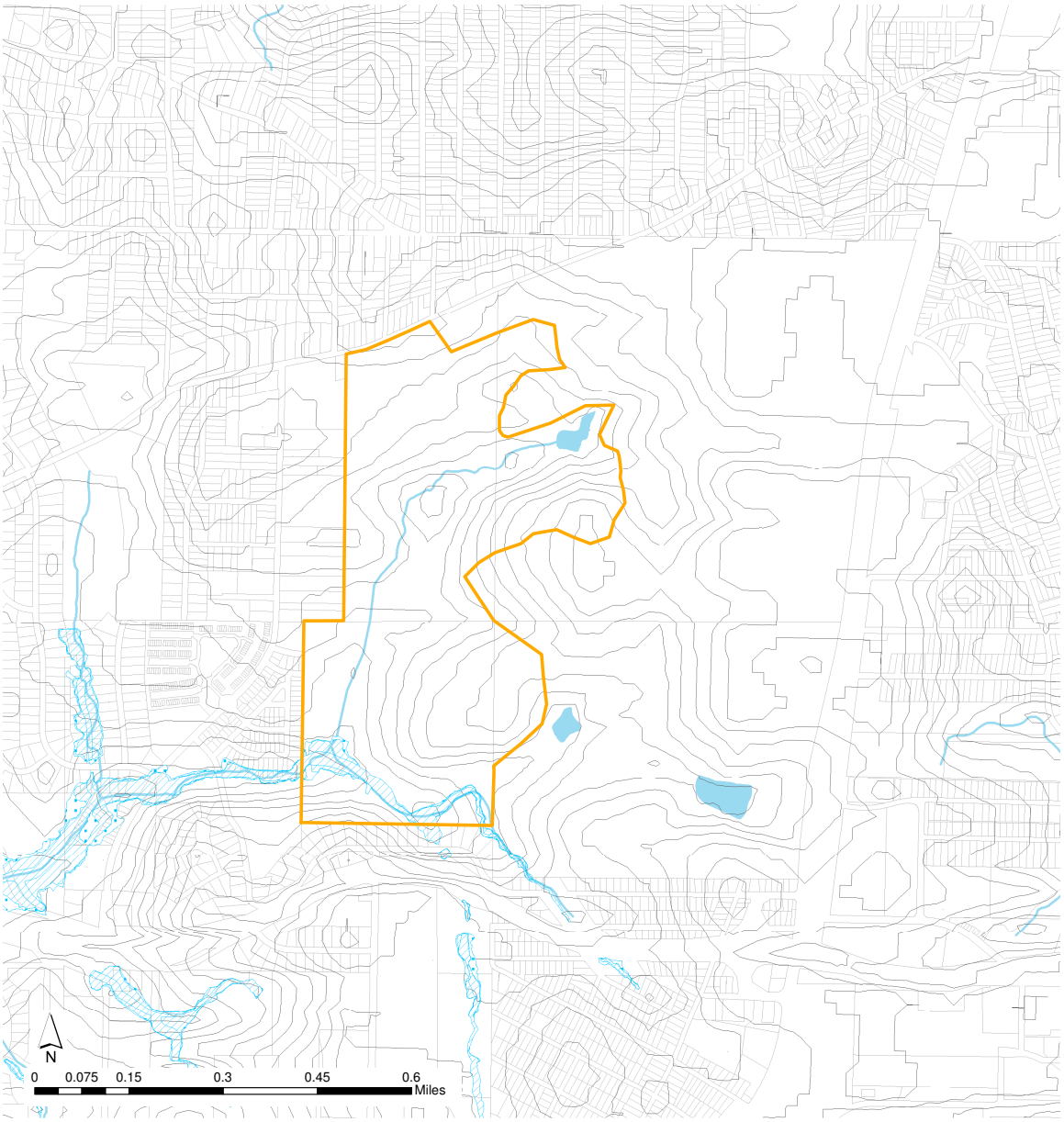


figure A-15. Floodplain

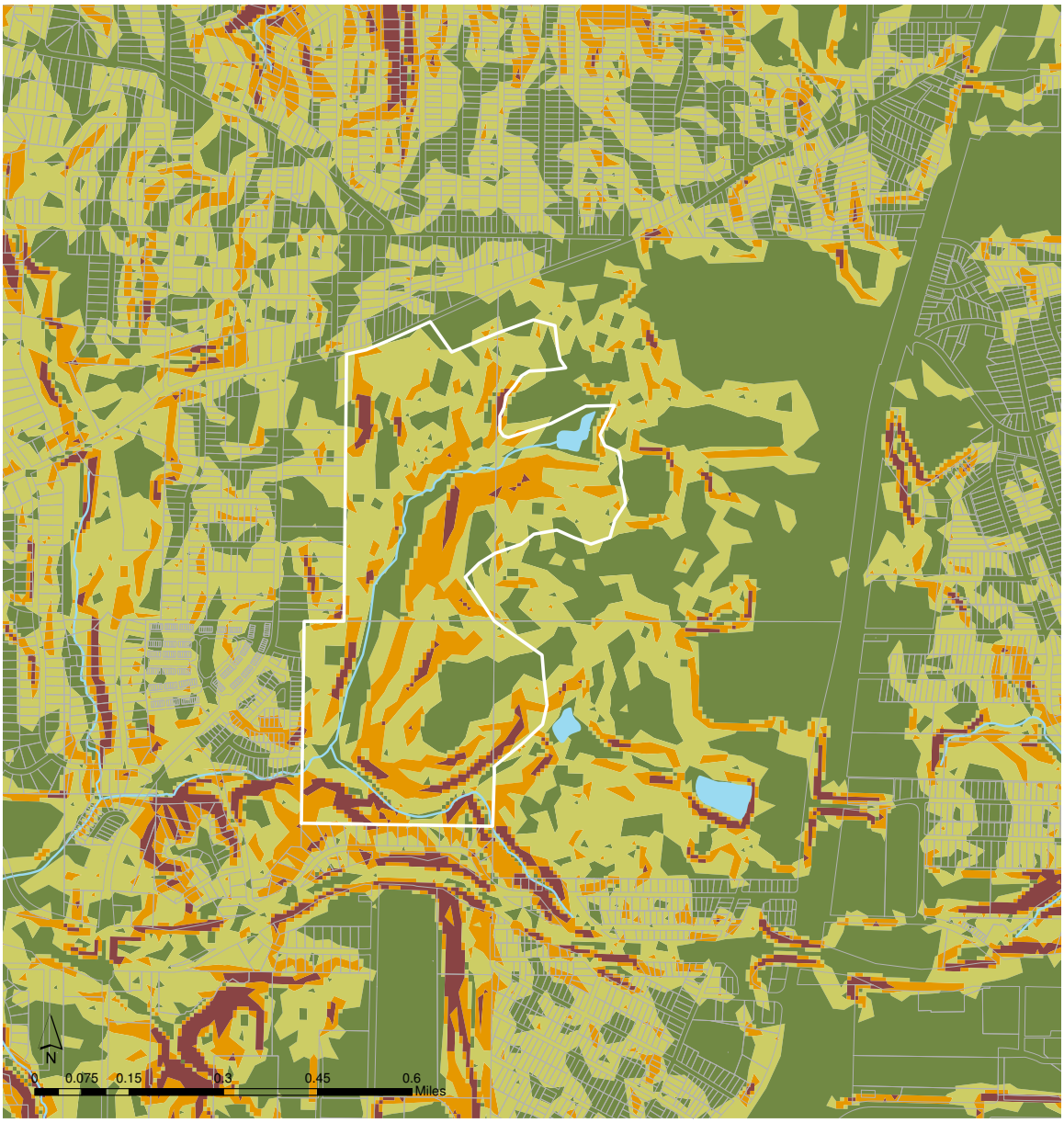


figure A-16. Slope

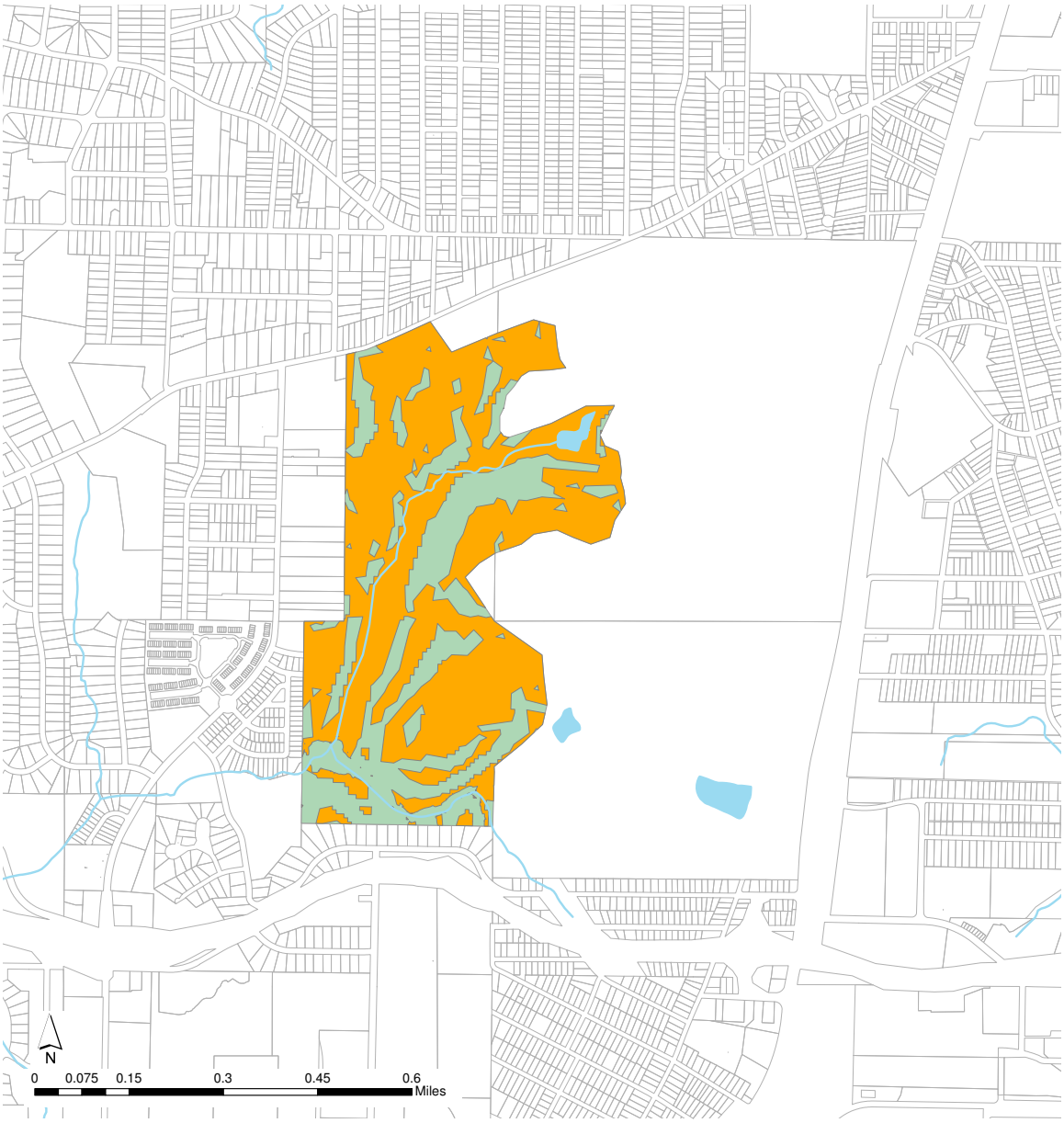


figure A-17. Suitability Analysis

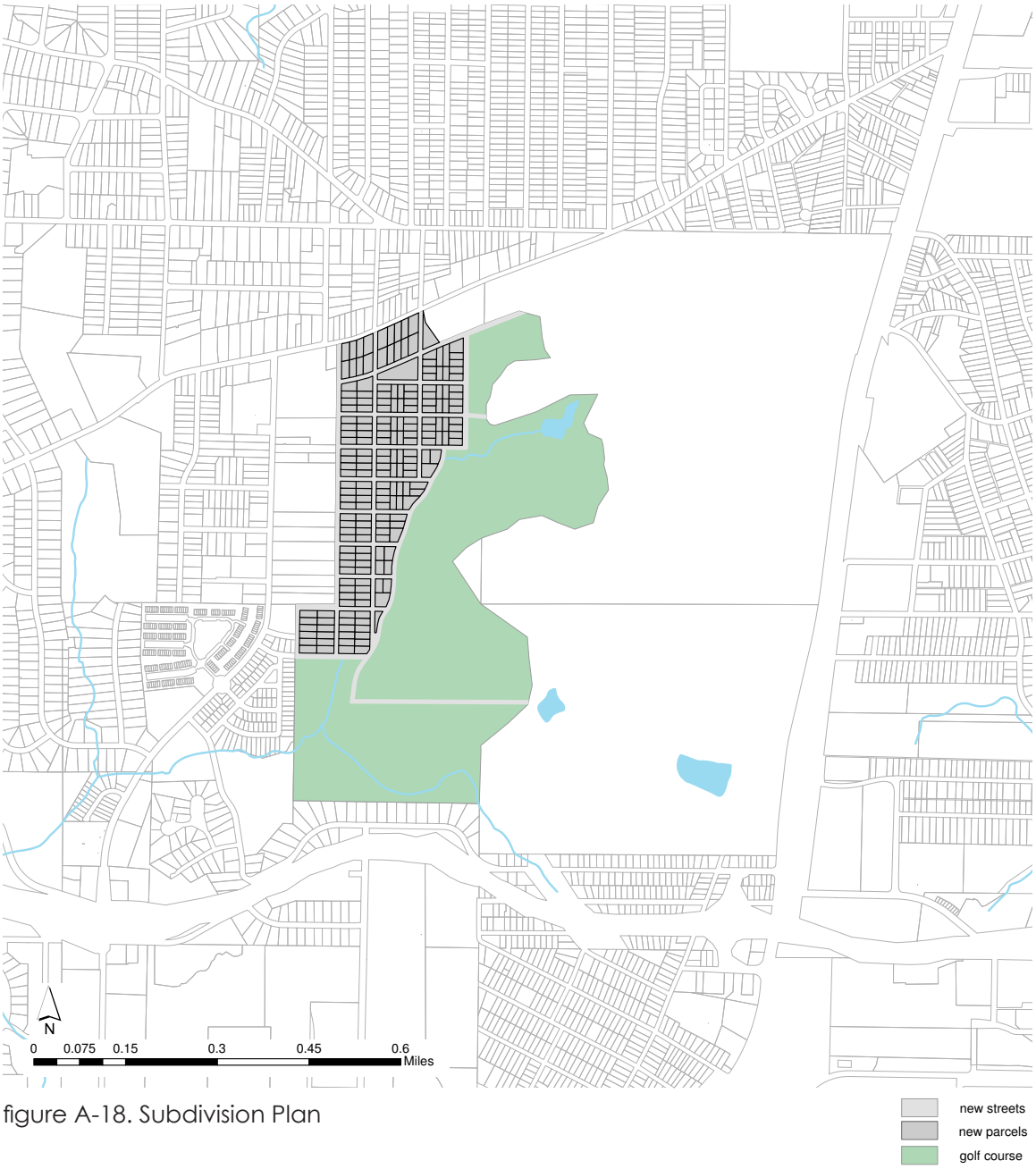


figure A-18. Subdivision Plan

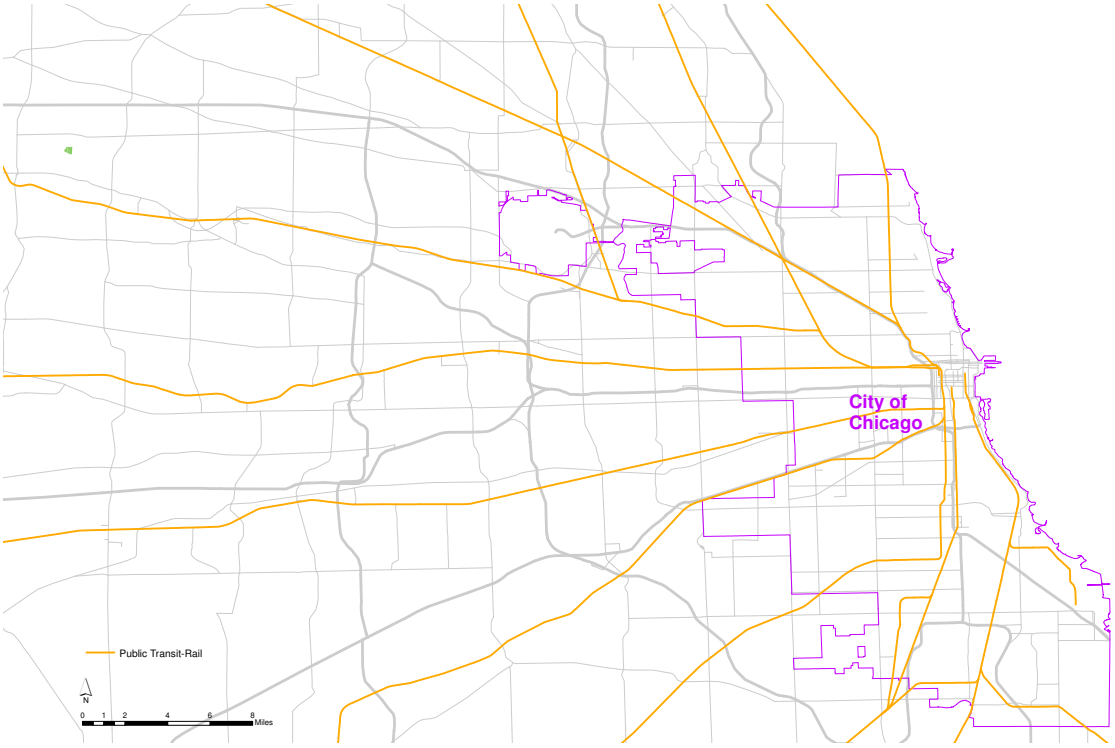


figure A-19. Regional Context: Ex-Urban

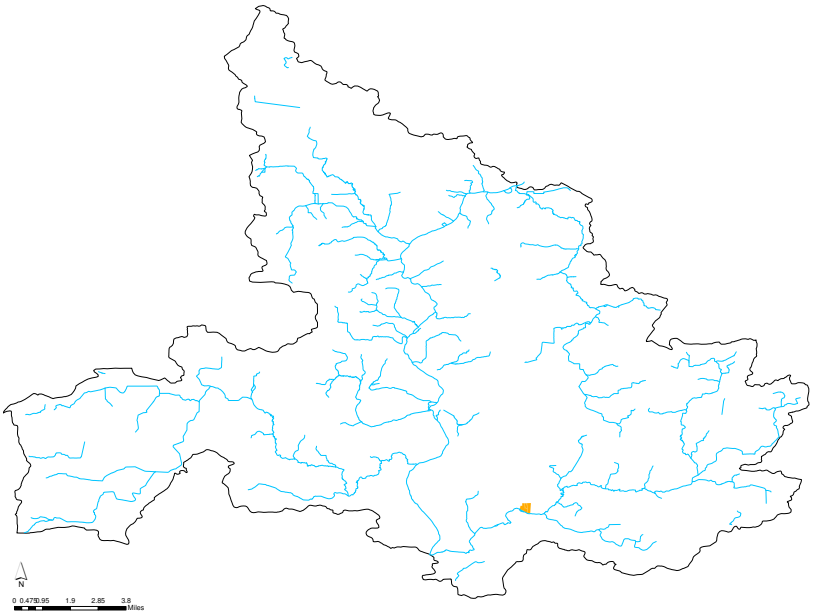


figure A-20. Watershed

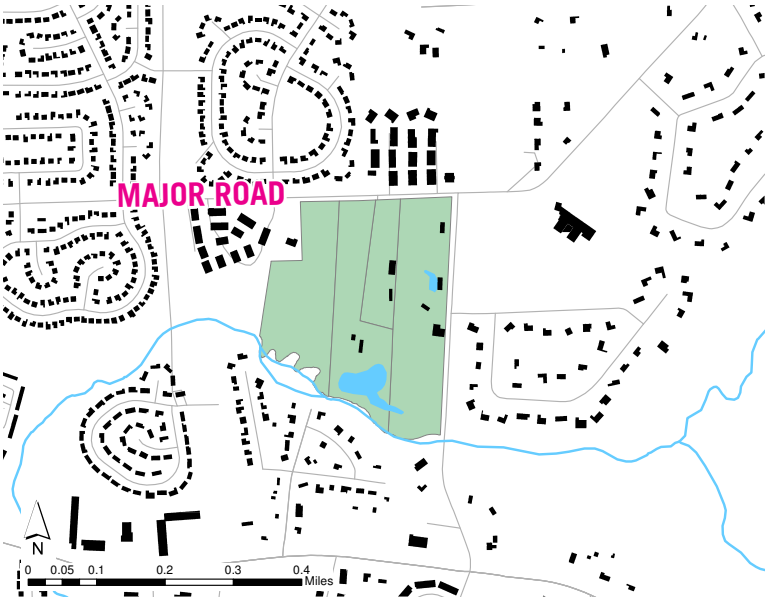


figure A-21. Buildings and Centerlines

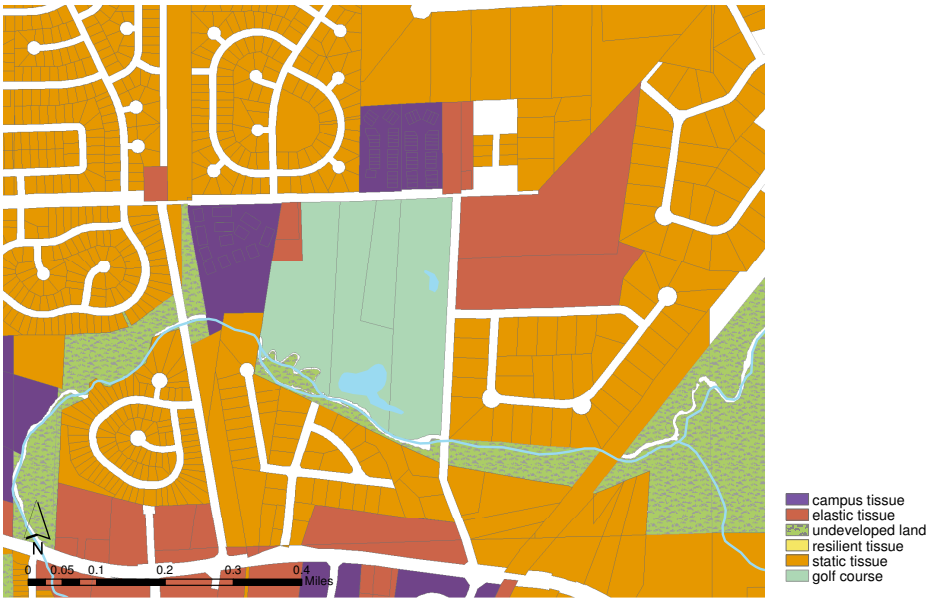


figure A-22. Tissues

figure A-23. Access Nodes

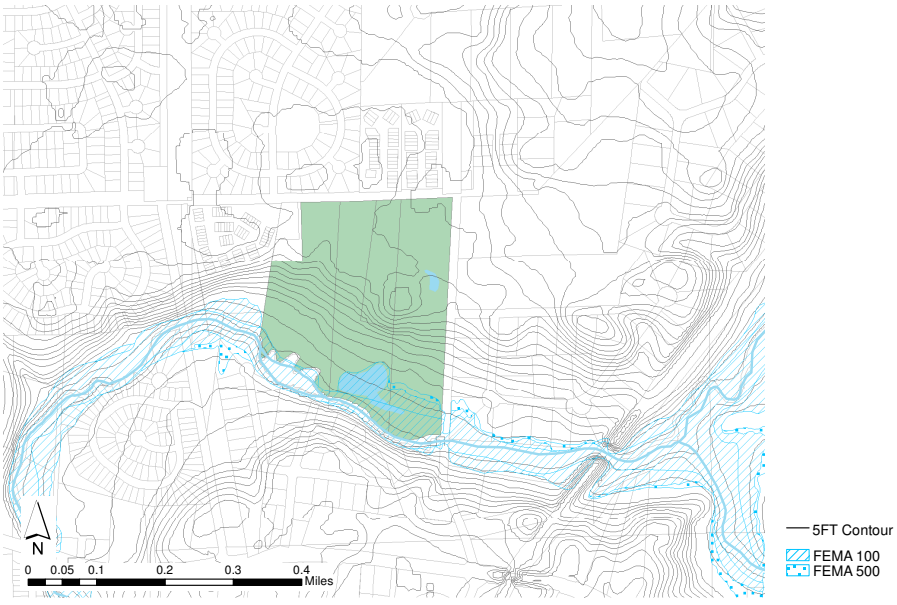


figure A-24. Floodplain

figure A-25. Slope

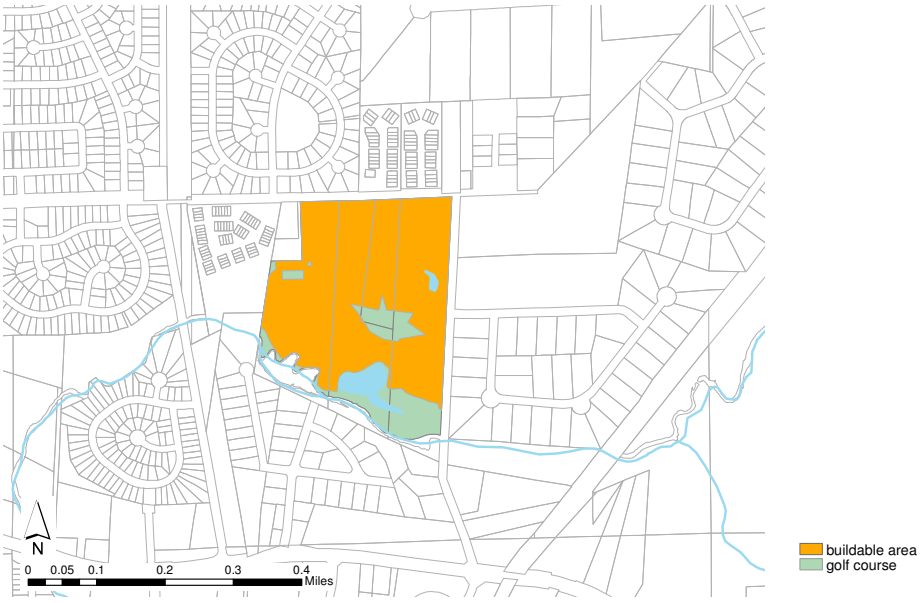


figure A-26. Sutability Analysis

figure A-27. Subdivision Plan

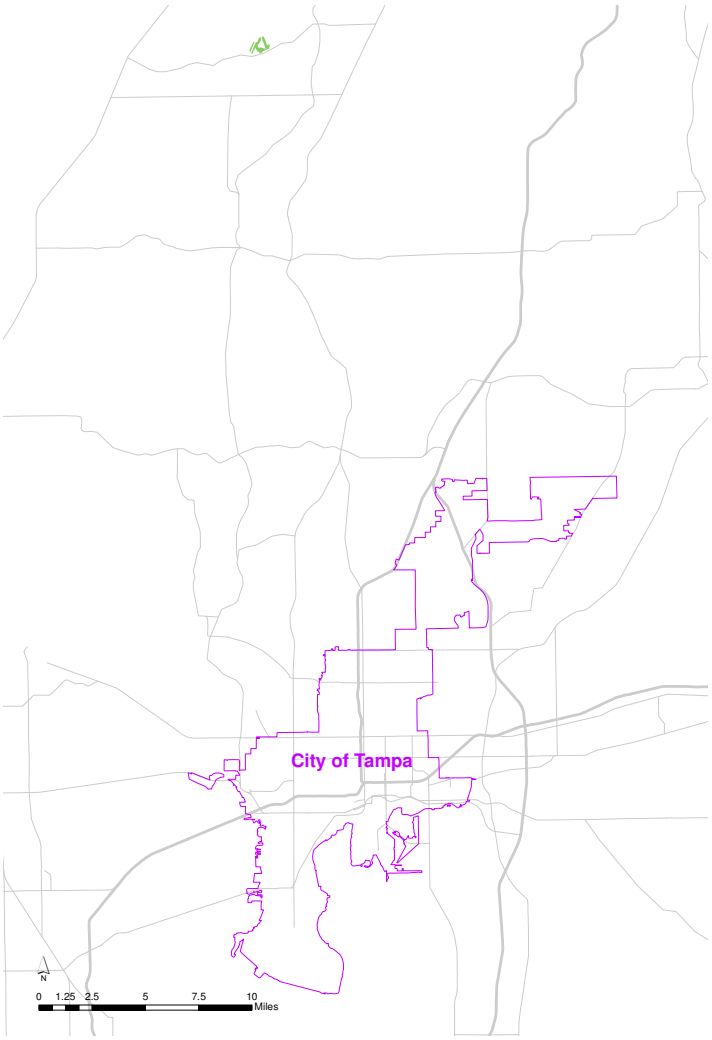


figure A-28. Regional Context: Ex-Urban

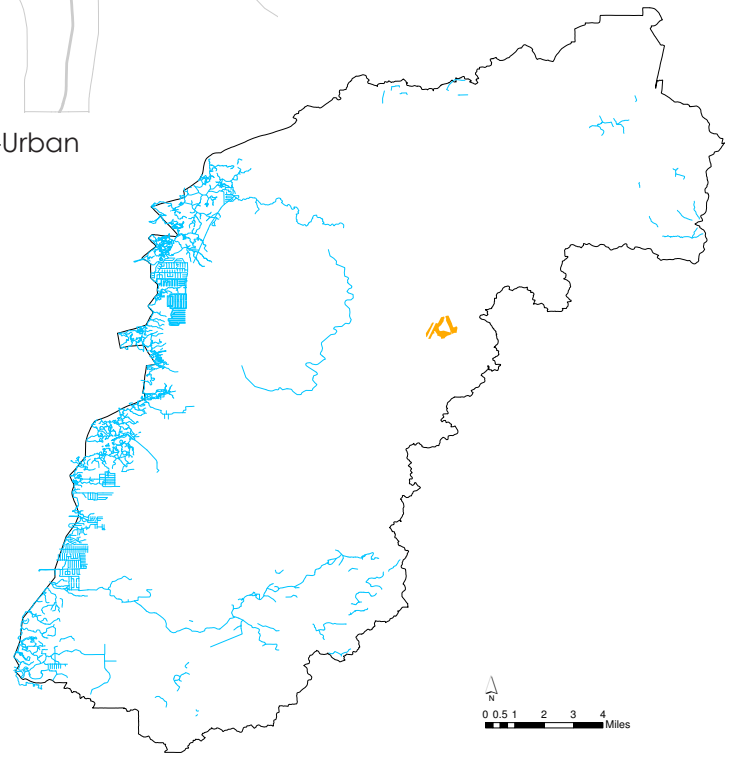


figure A-29. Watershed

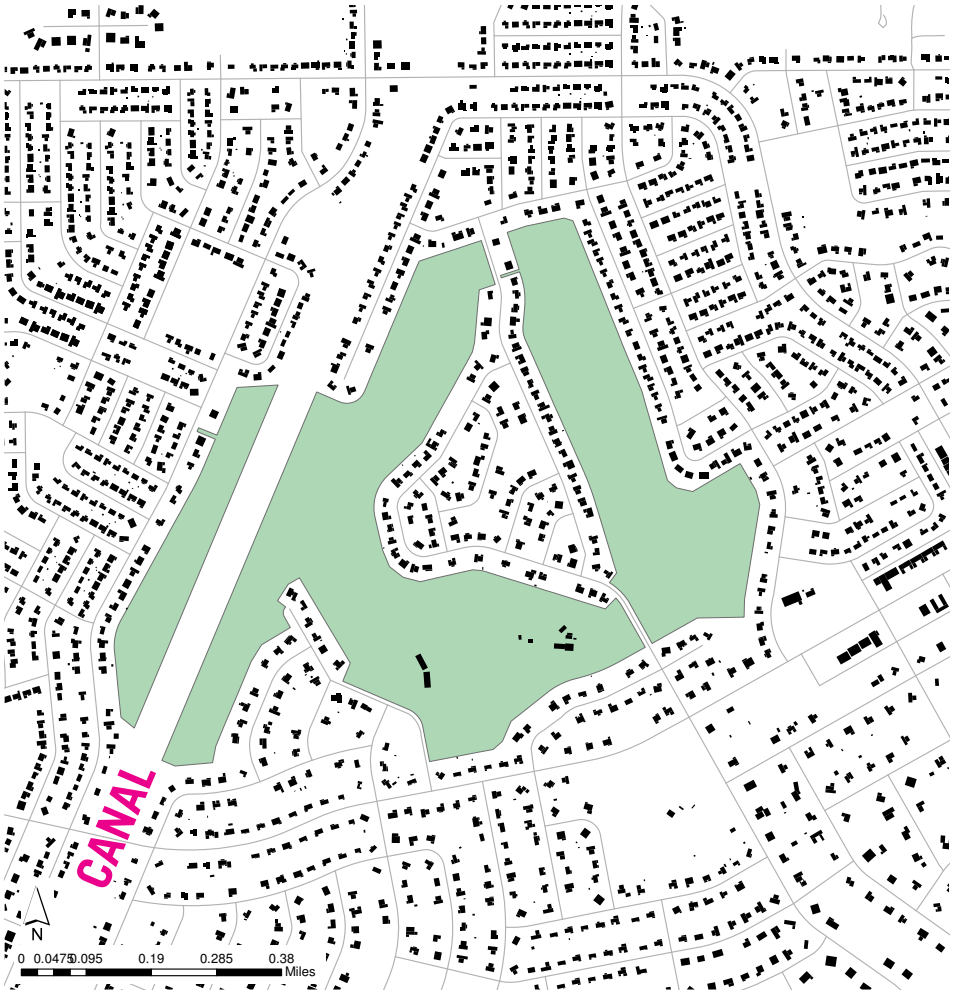


figure A-30. Buildings and Centerlines

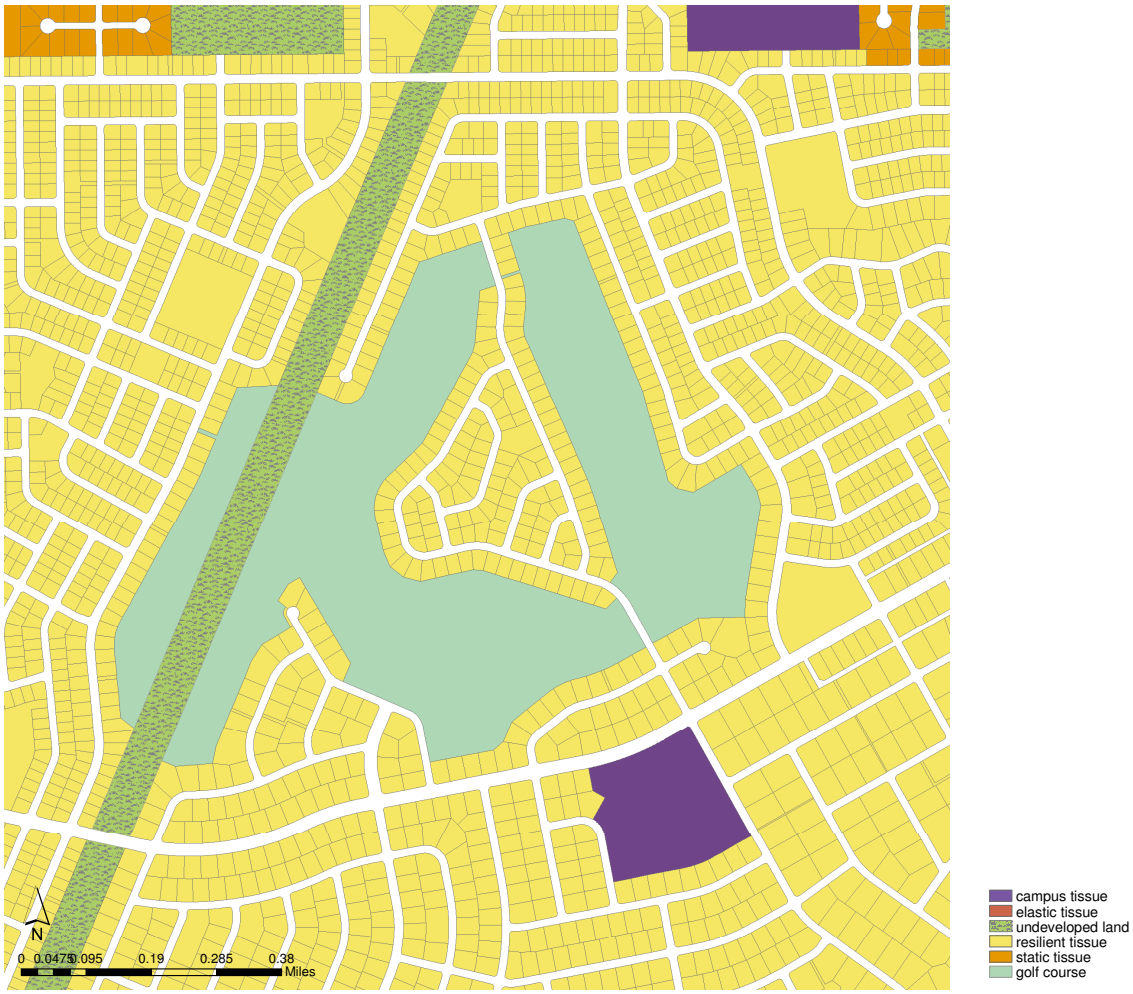


figure A-31. Tissues

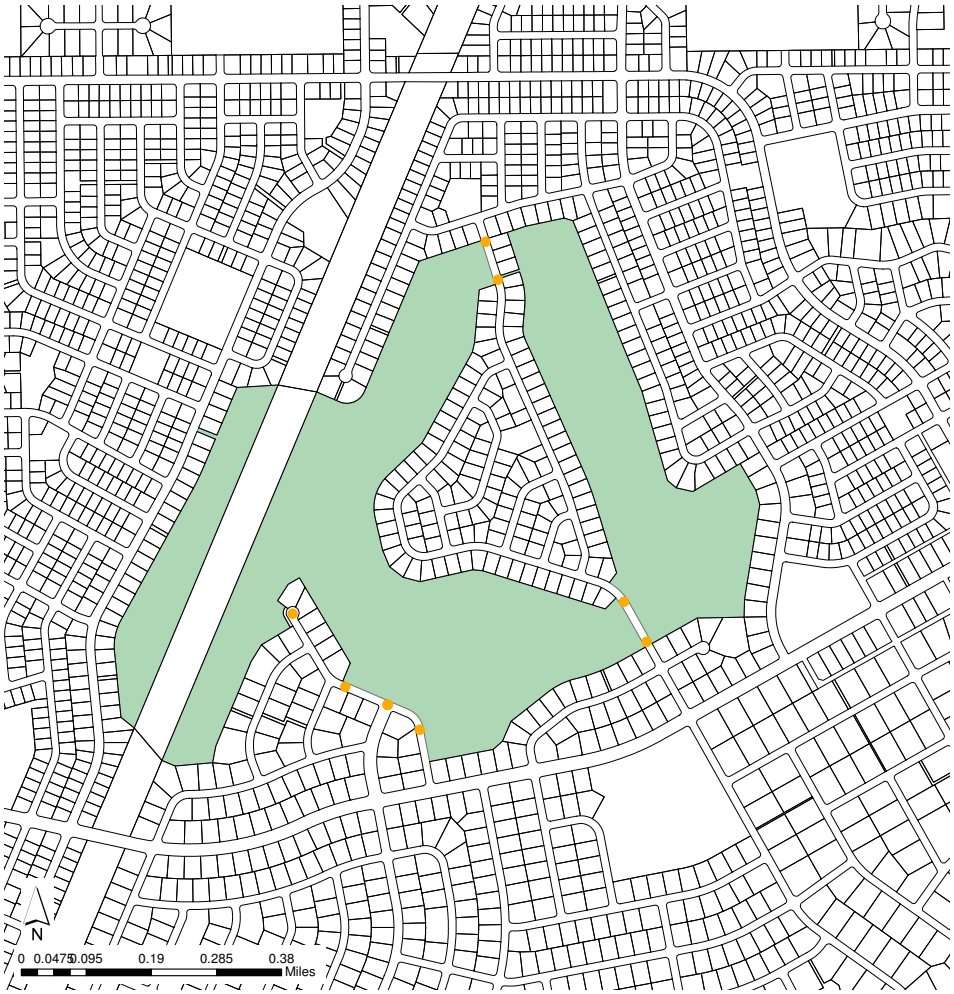


figure A-32. Access Nodes

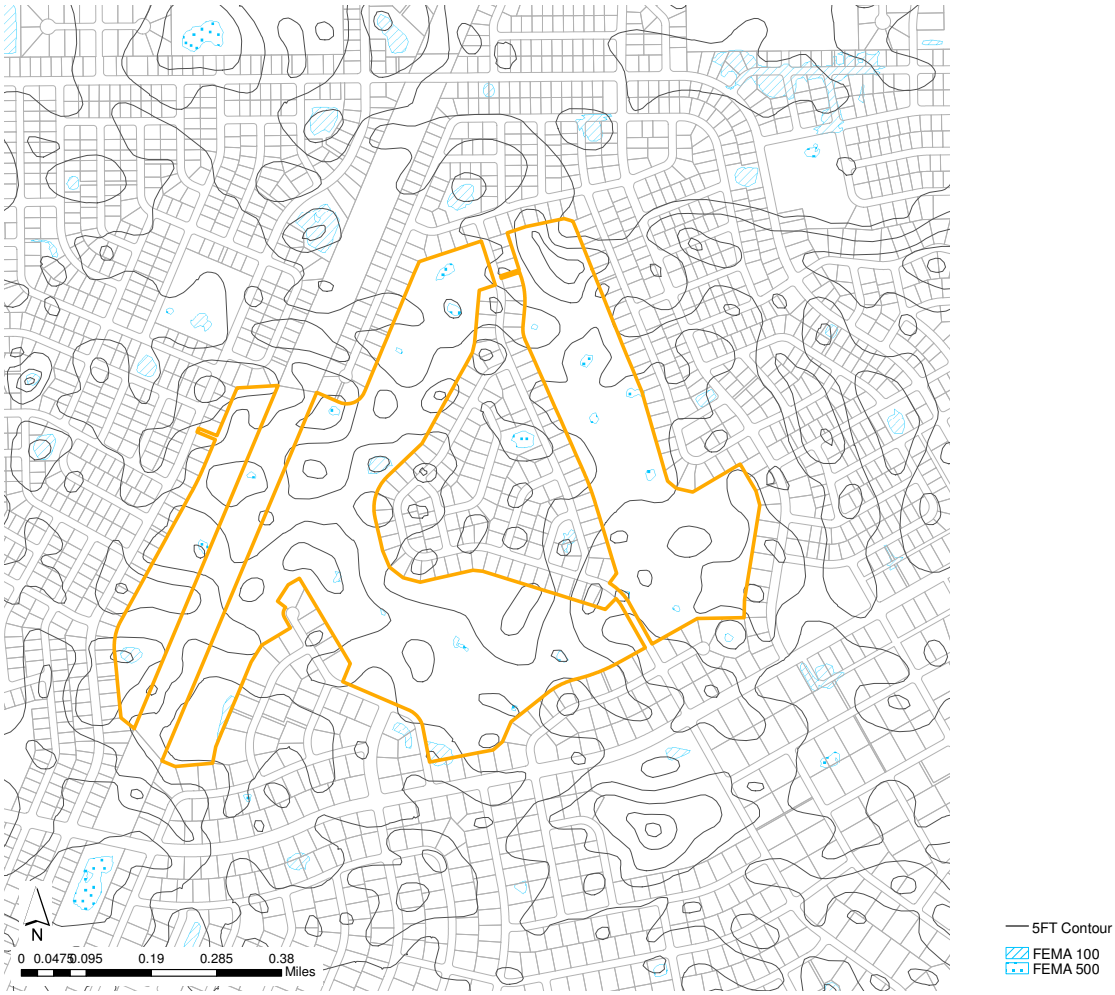


figure A-33. Floodplains

figure A-34. Slope

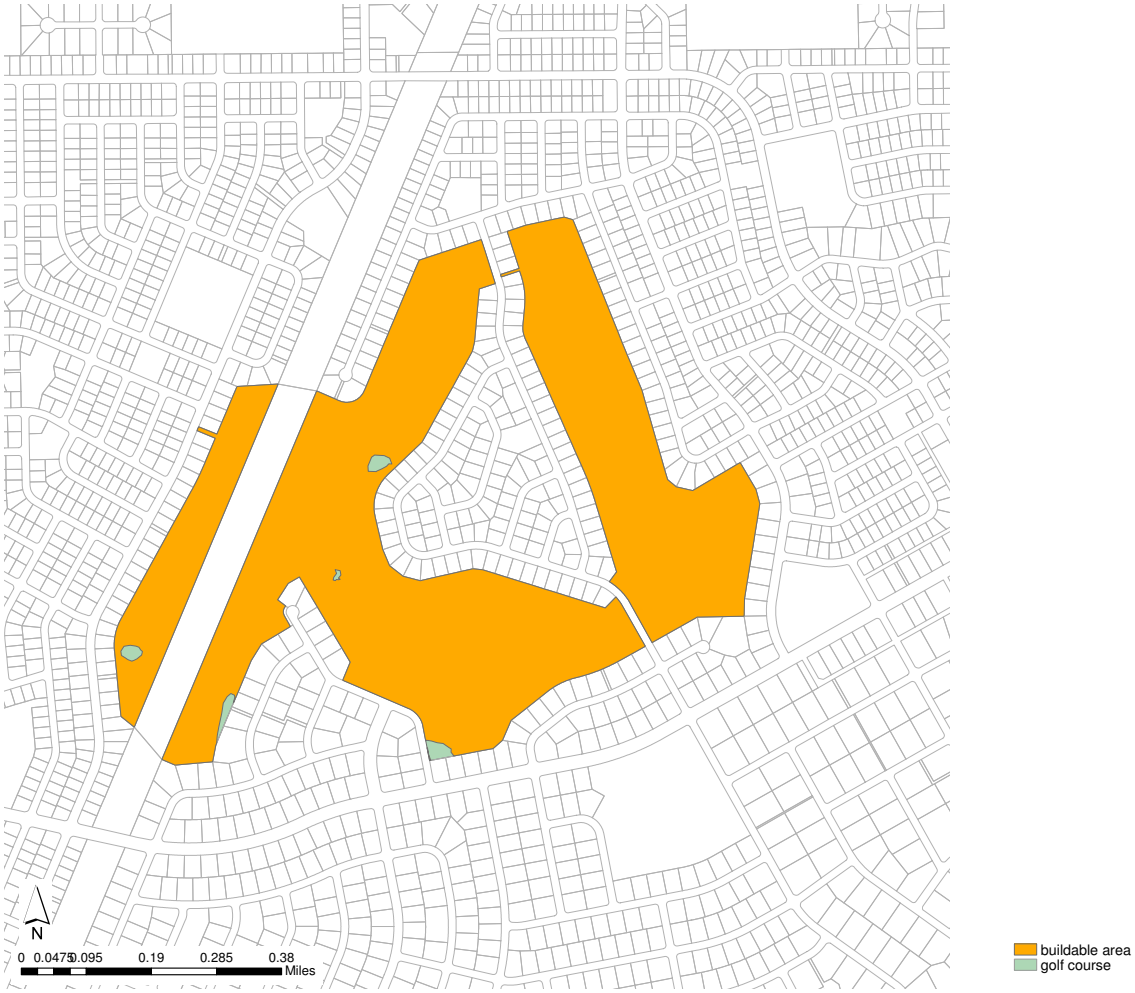


figure A-35. Suitability Analysis

figure A-36. Subdivision Plan

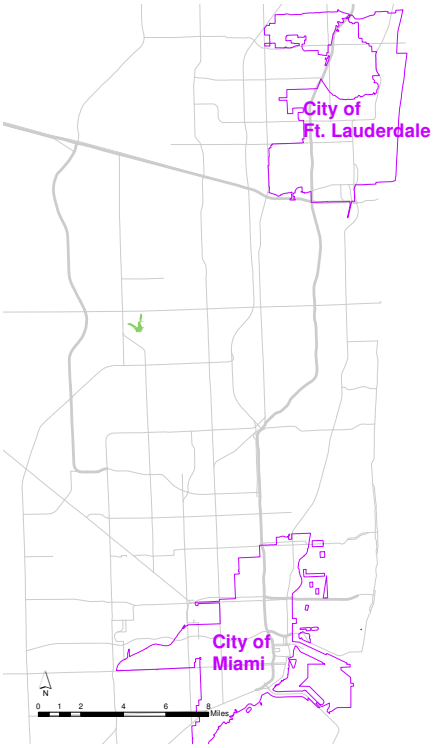


figure A-37. Regional Context: Suburban

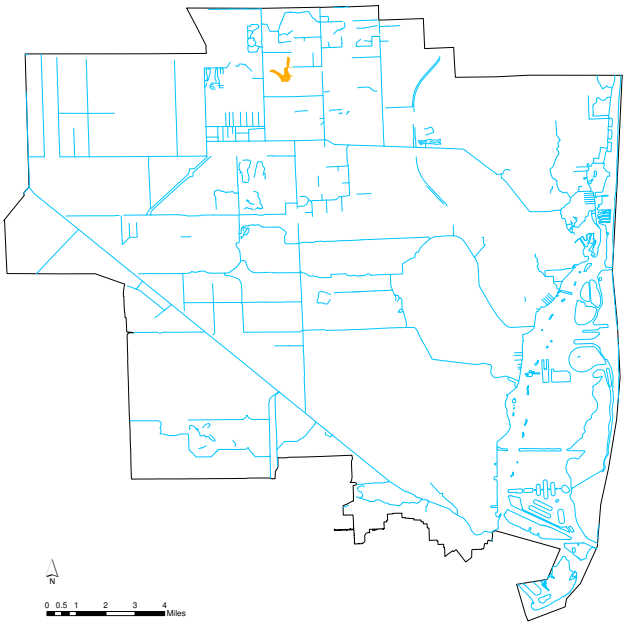
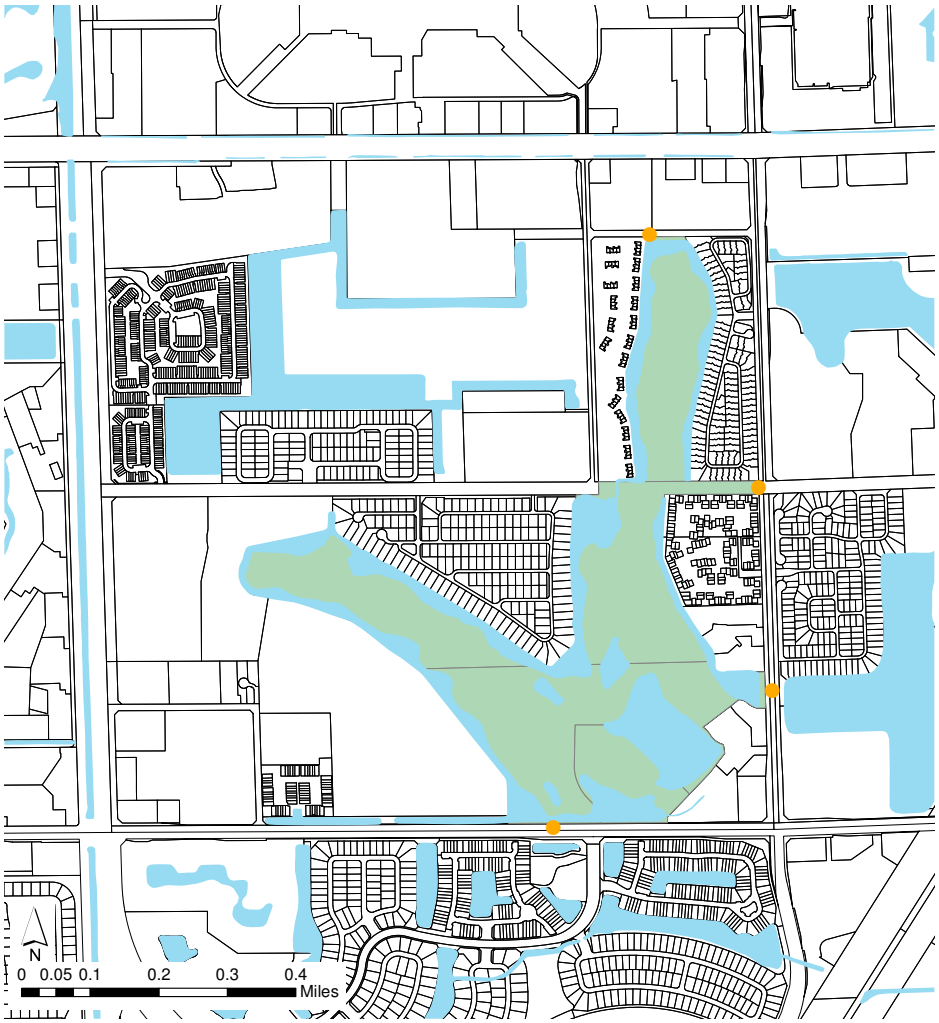


figure A-38. Watershed

figure A-39. Buildings and Centerlines

figure A-40. Tissues



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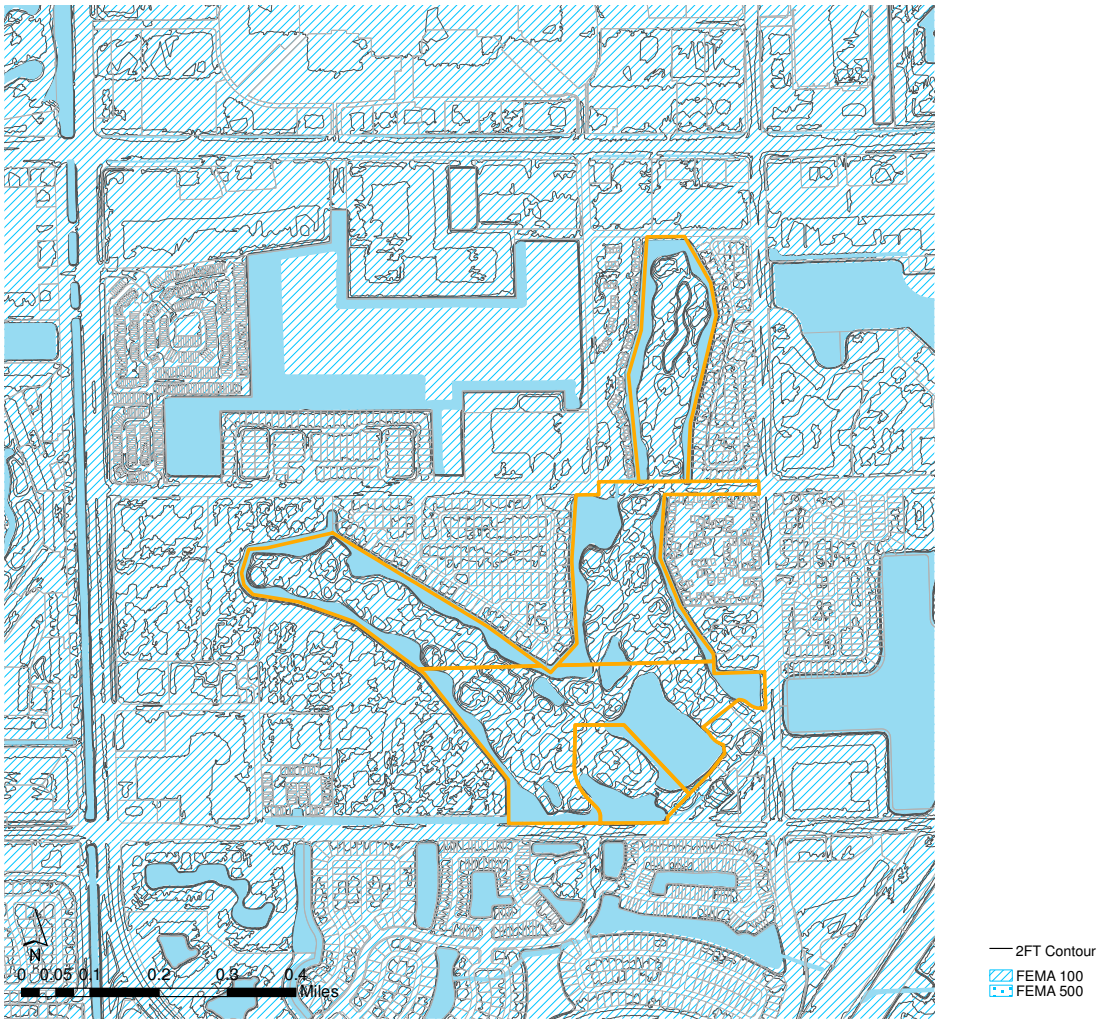

figure A-42. Floodplain

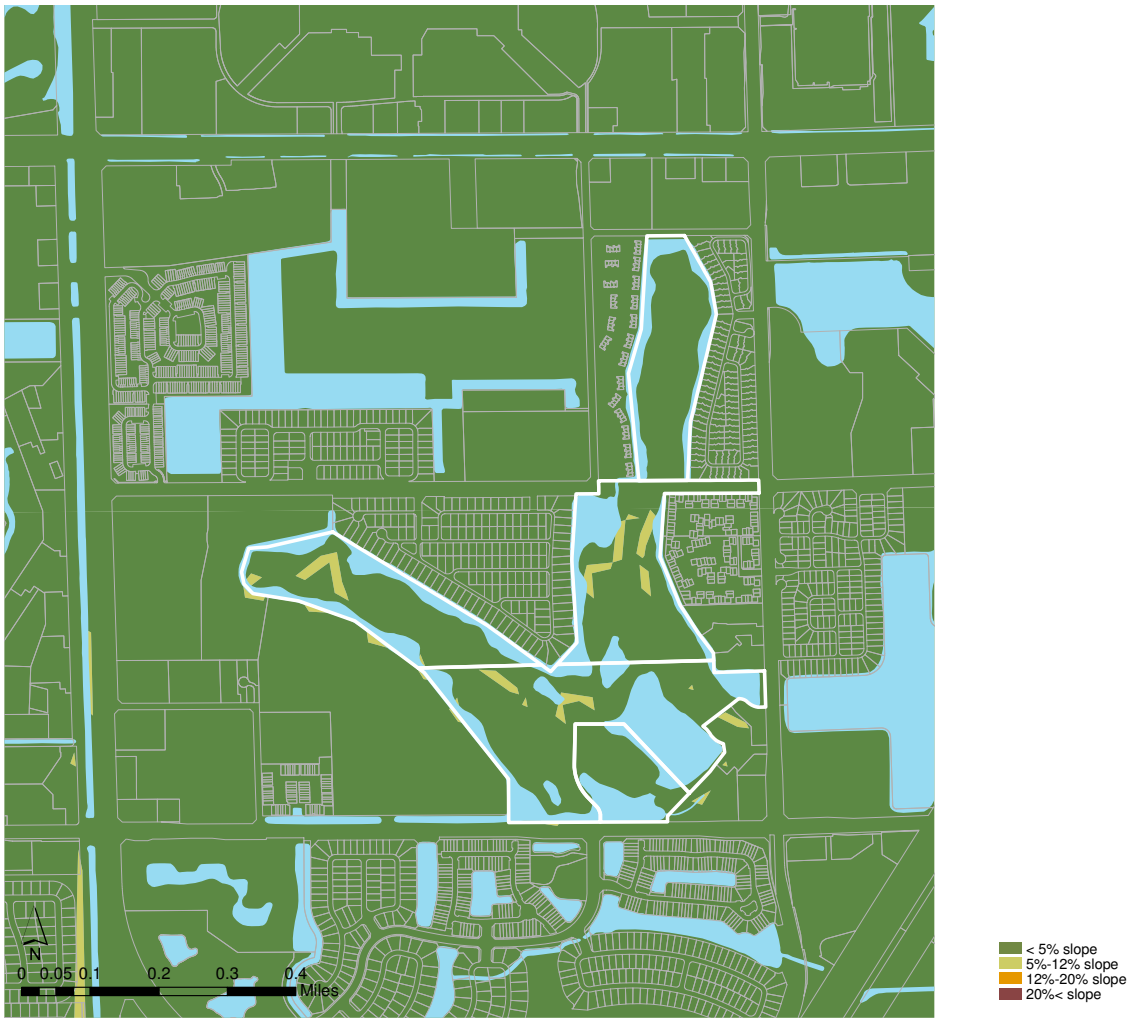

figure A-43. Slope

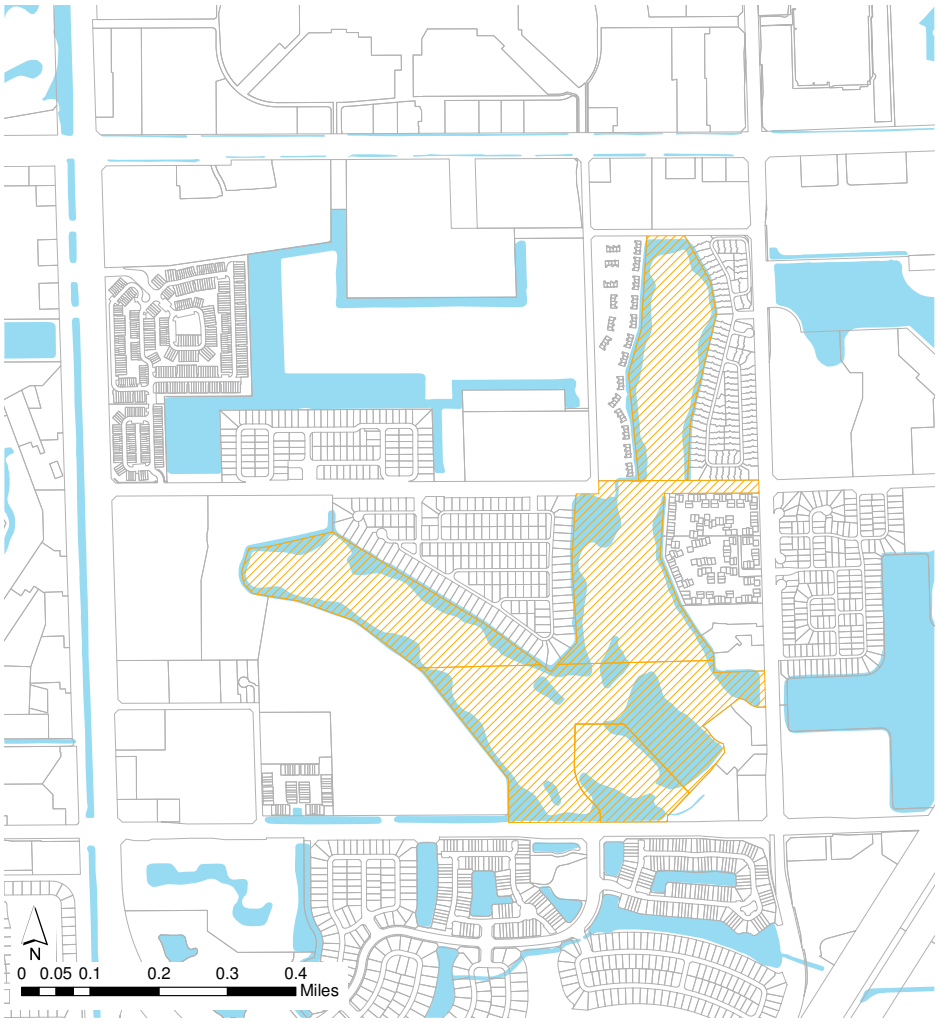

figure A-44. Suitability Analysis

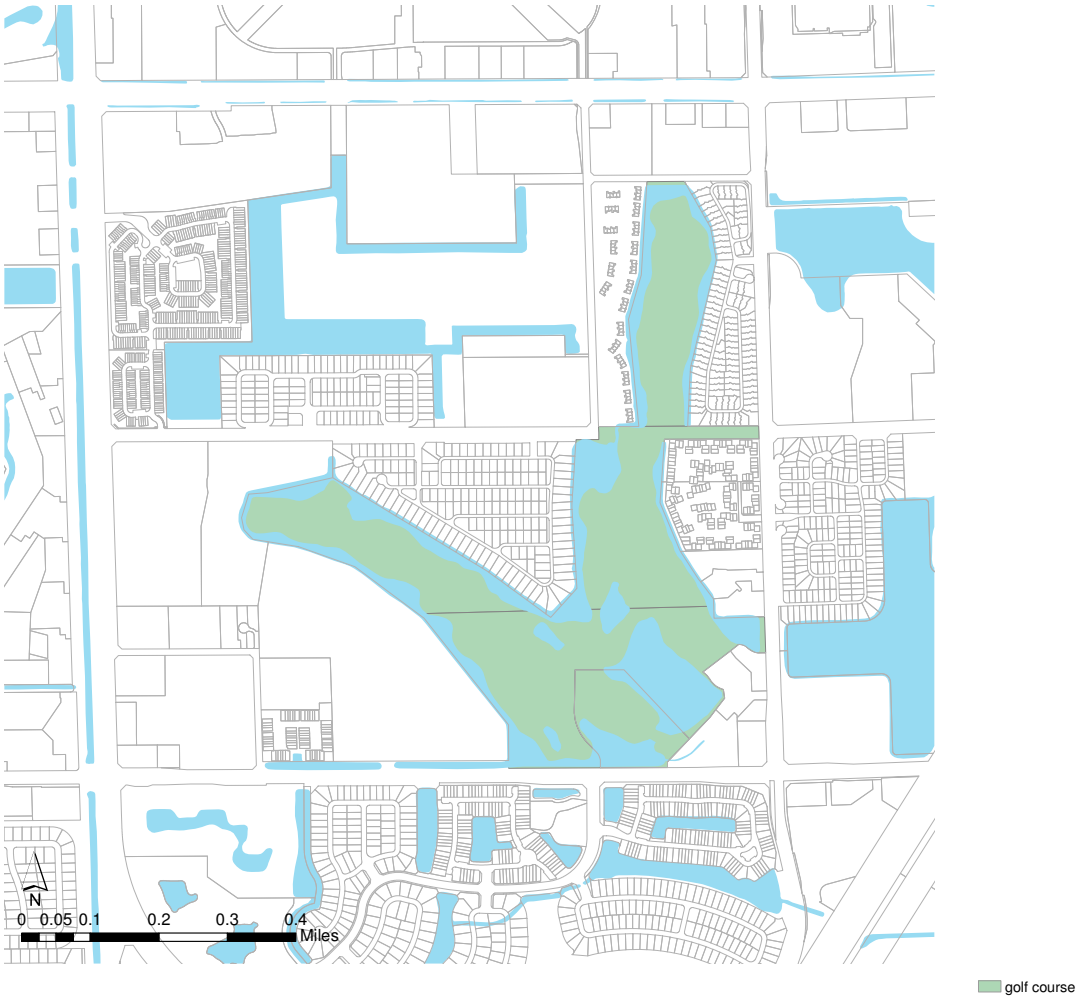

figure A-45. Subdivision Plan

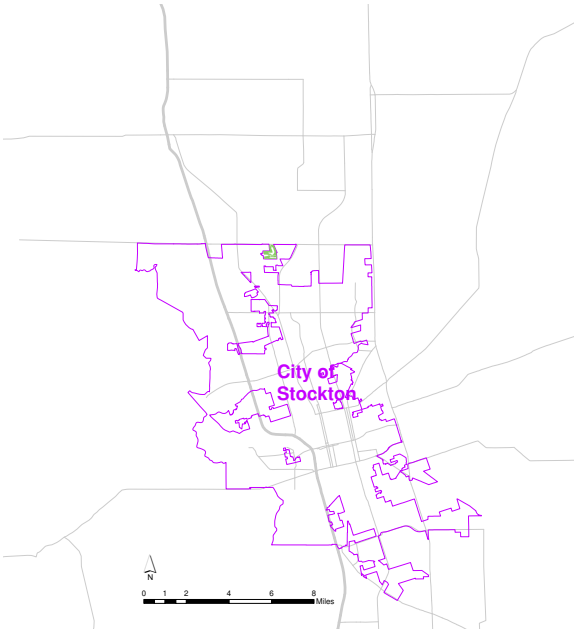

figure A-46. Regional Context: Suburban

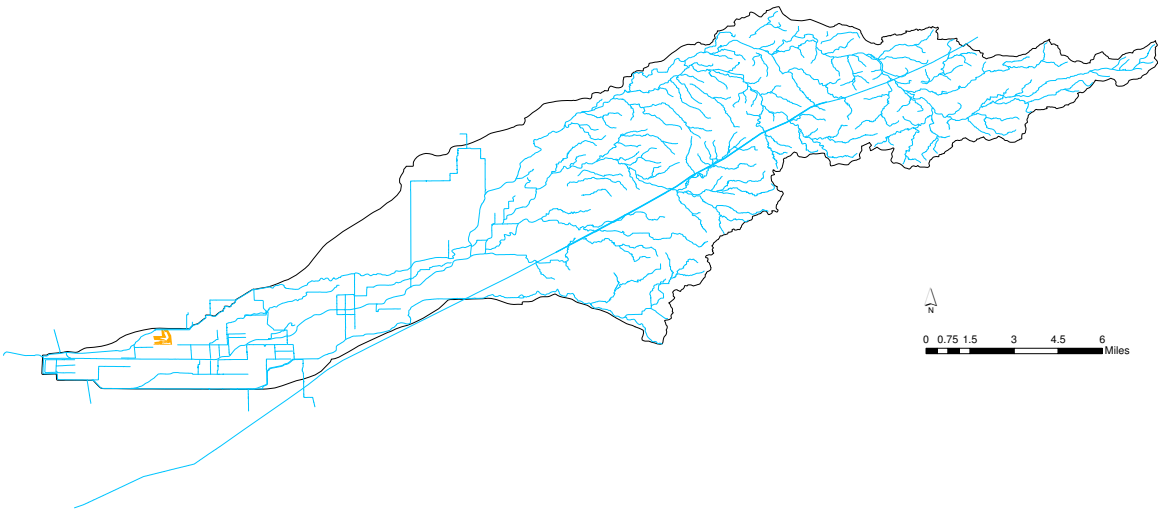

figure A-47. Watershed

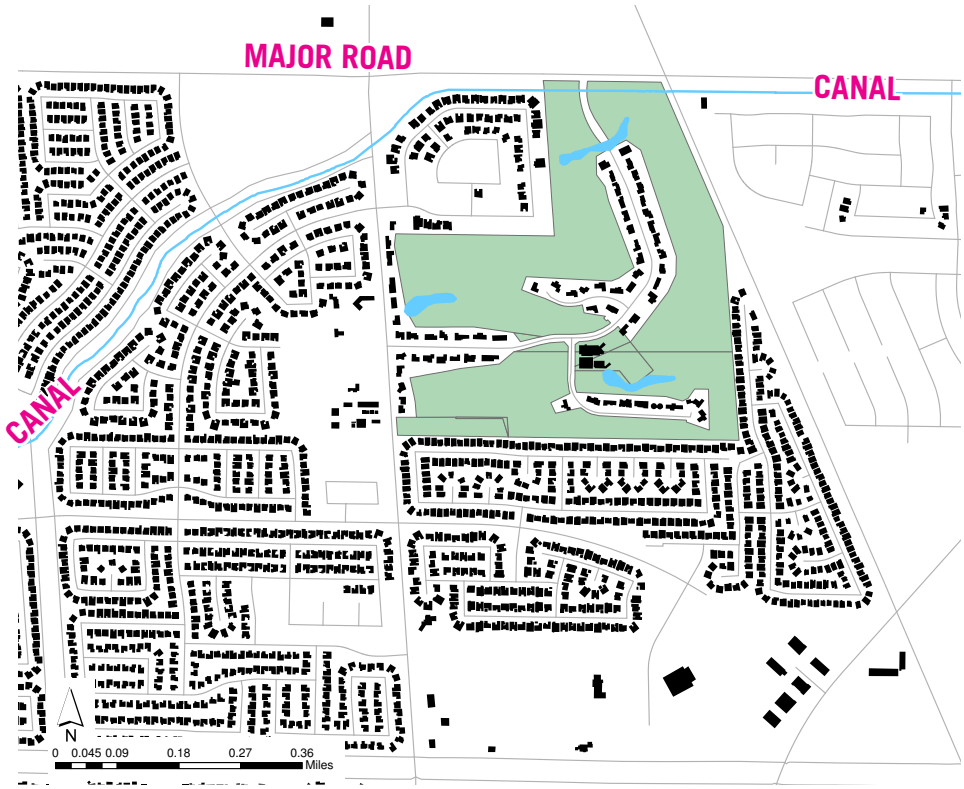

figure A-48. Buildings and Centerlines

figure A-49. Tissues

figure A-50. Access Nodes

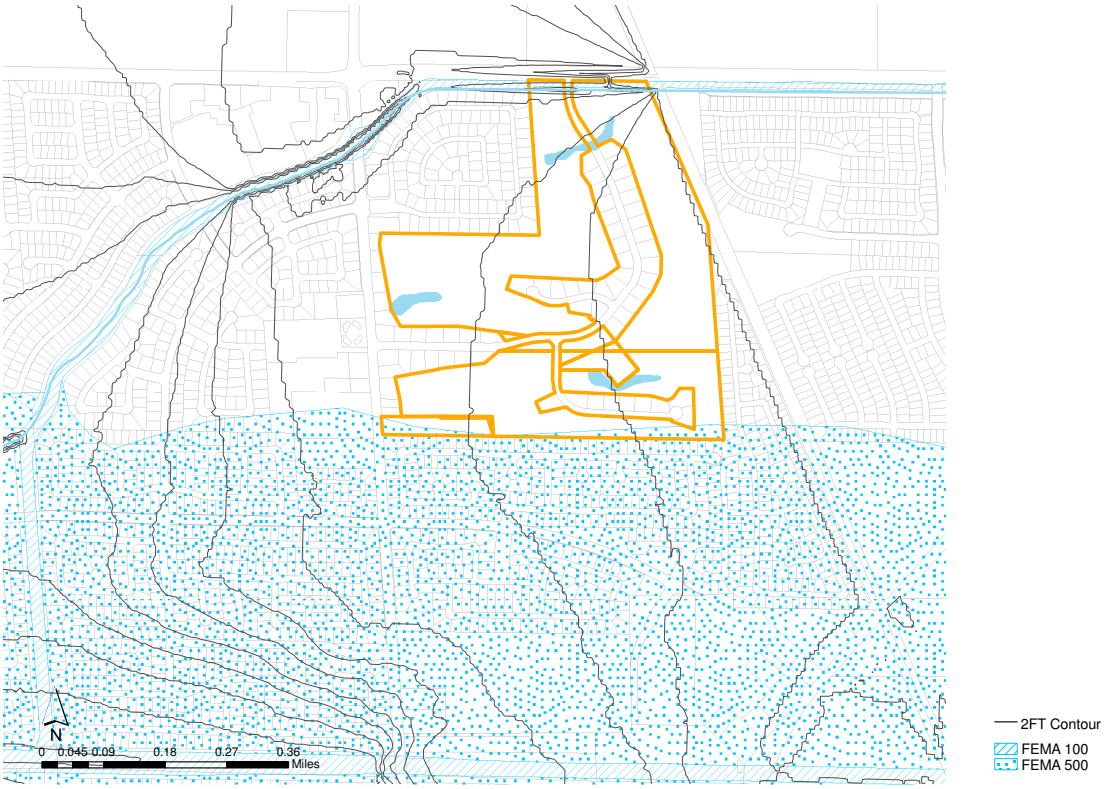

figure A-51. Floodplain

figure A-52. Slope

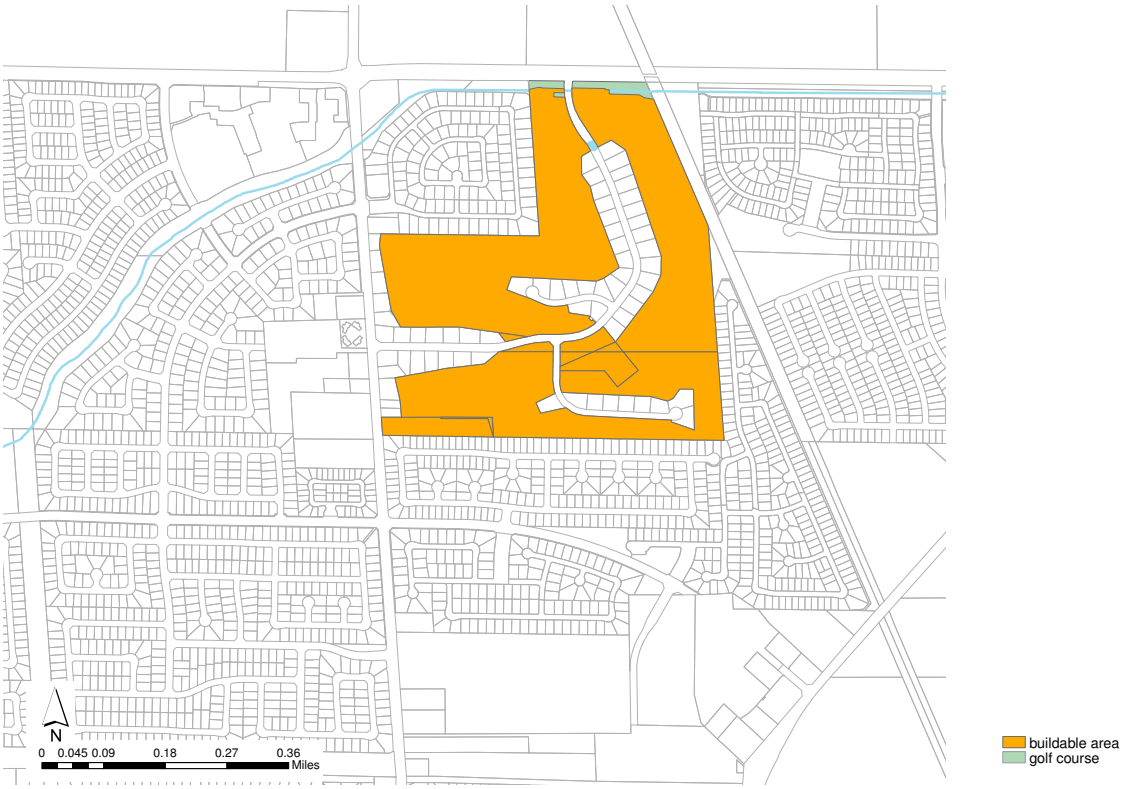

figure A-53. Suitability Analysis

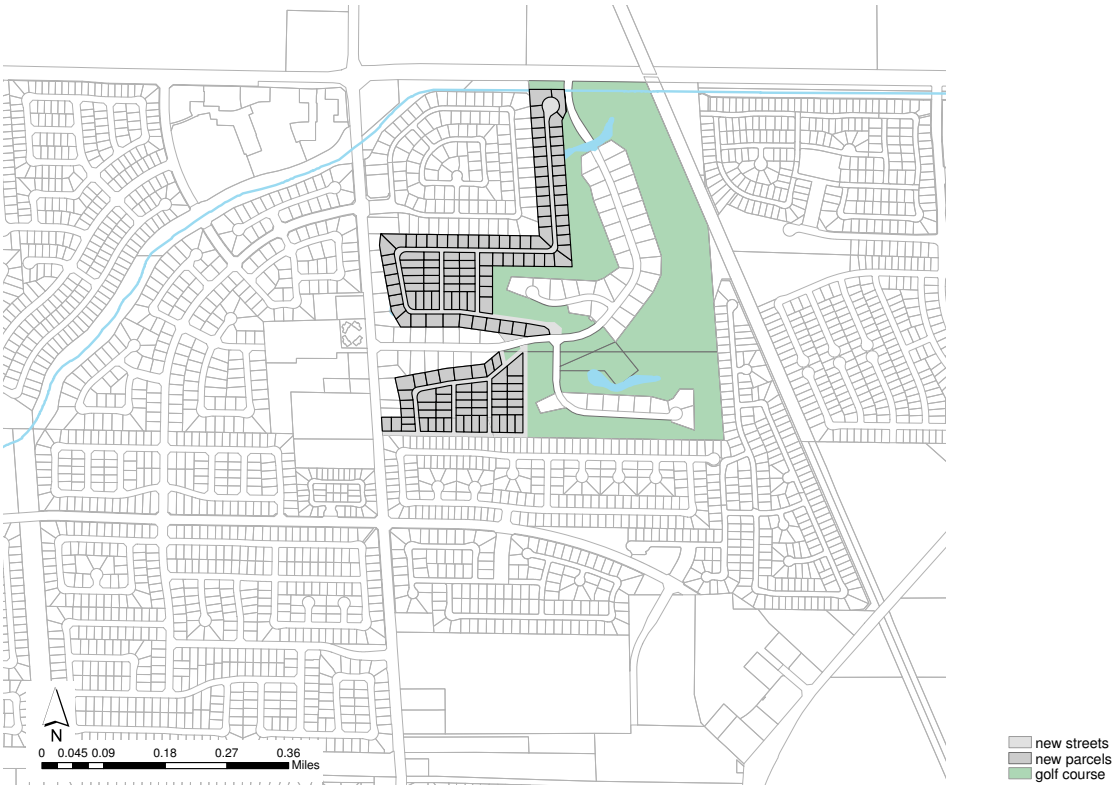

figure A-54. Subdivision Plan

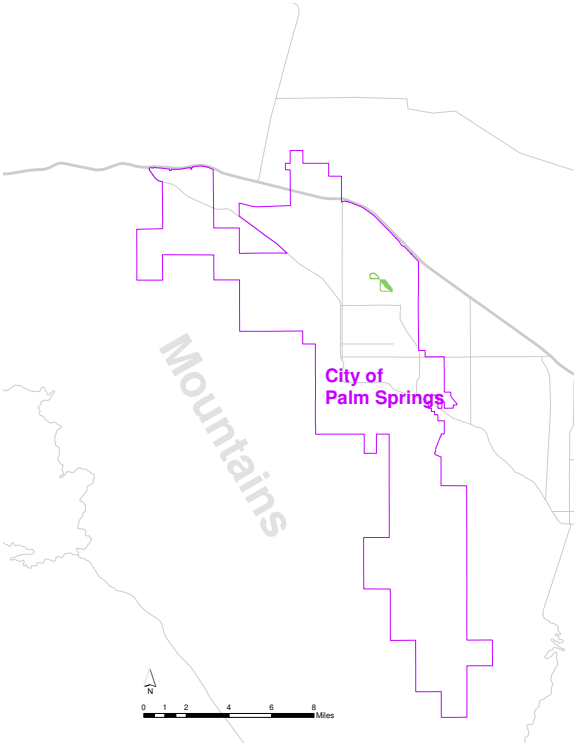

figure A-55. Regional Context: Resort

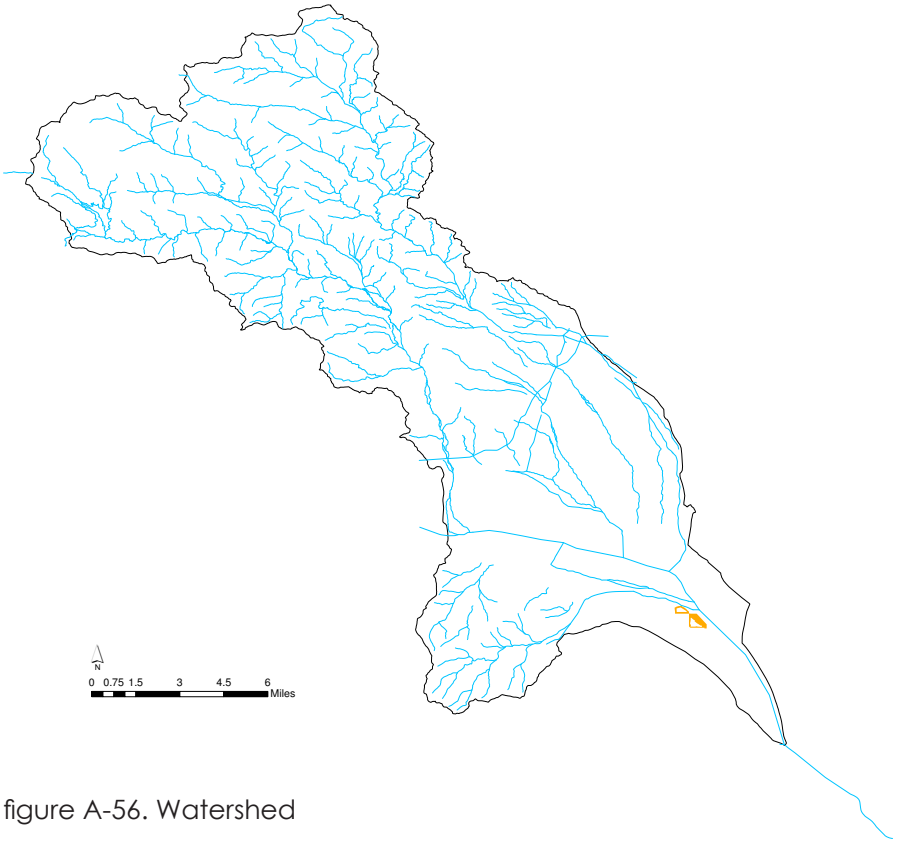

figure A-56. Watershed

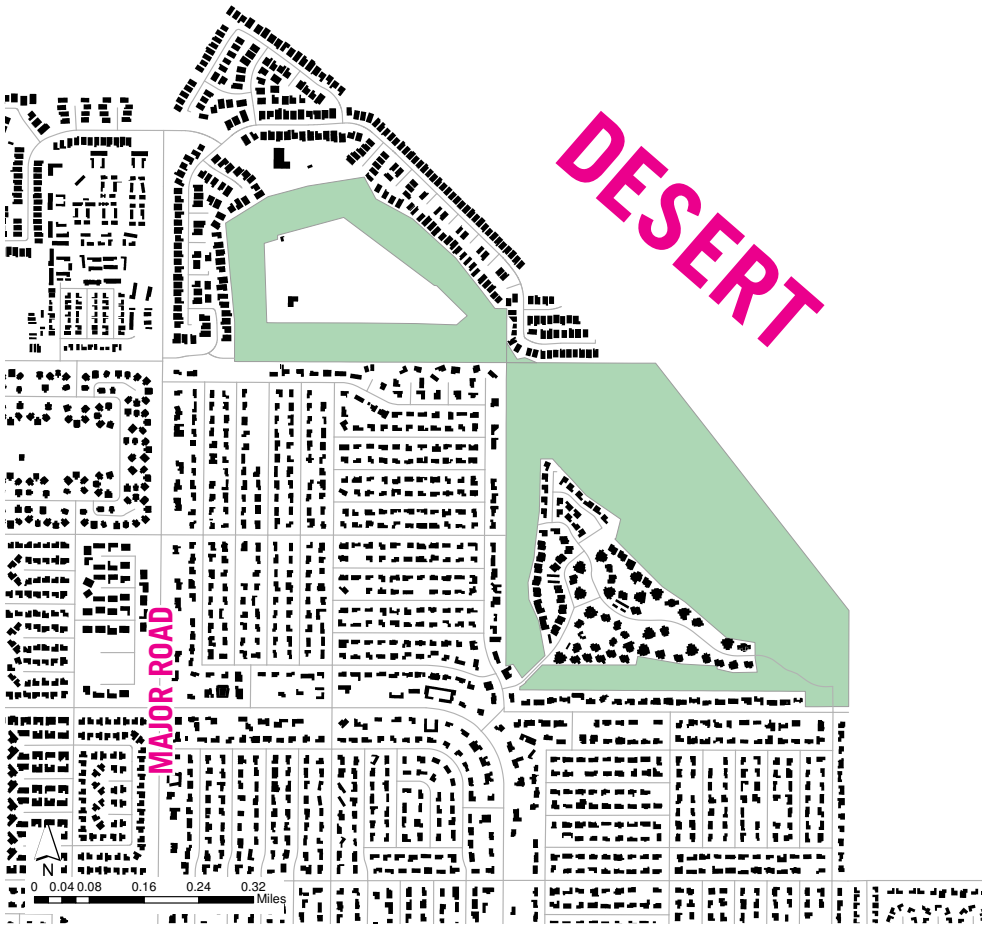

figure A-57. Buildings and Centerlines

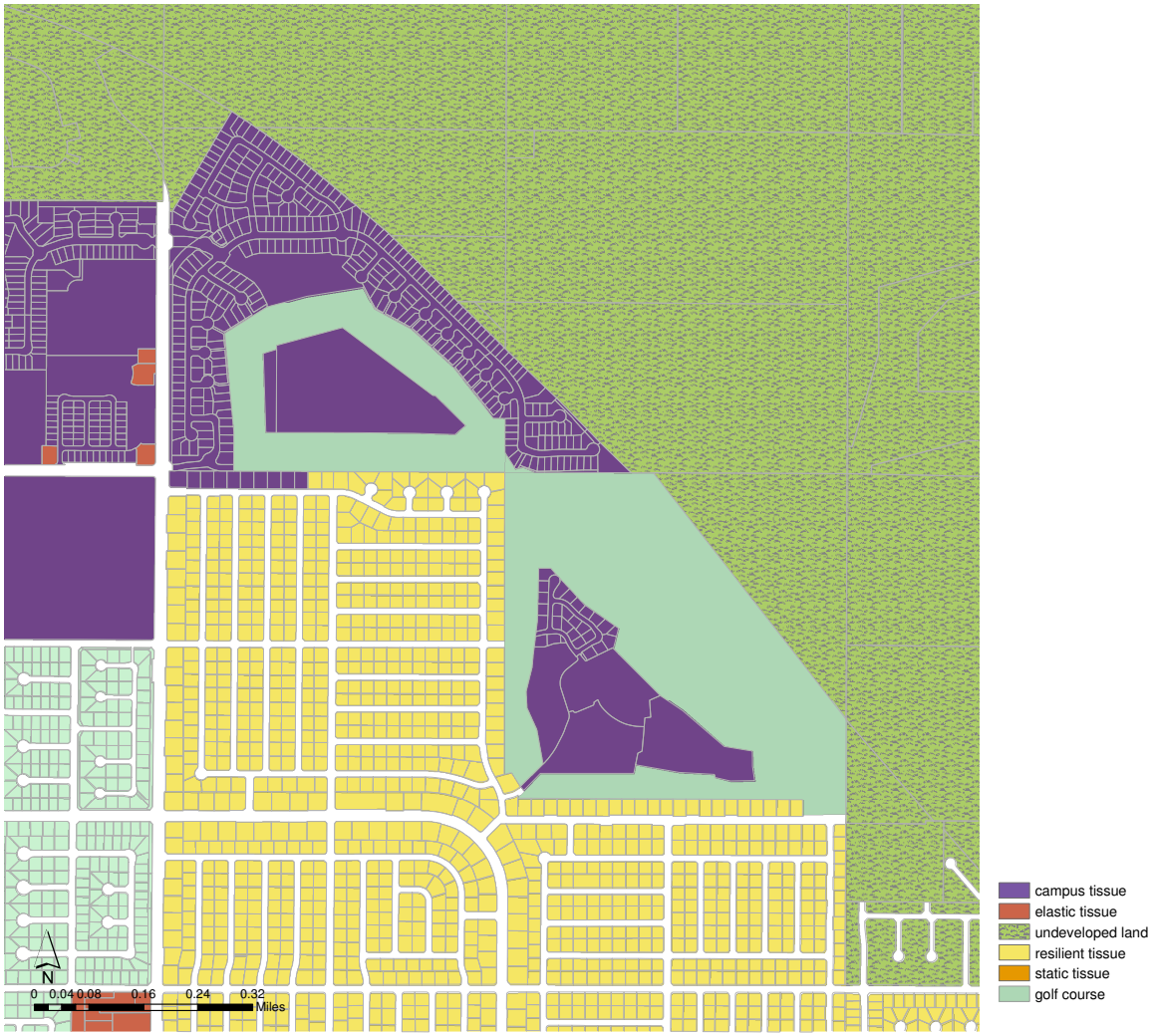

figure A-58. Tissues

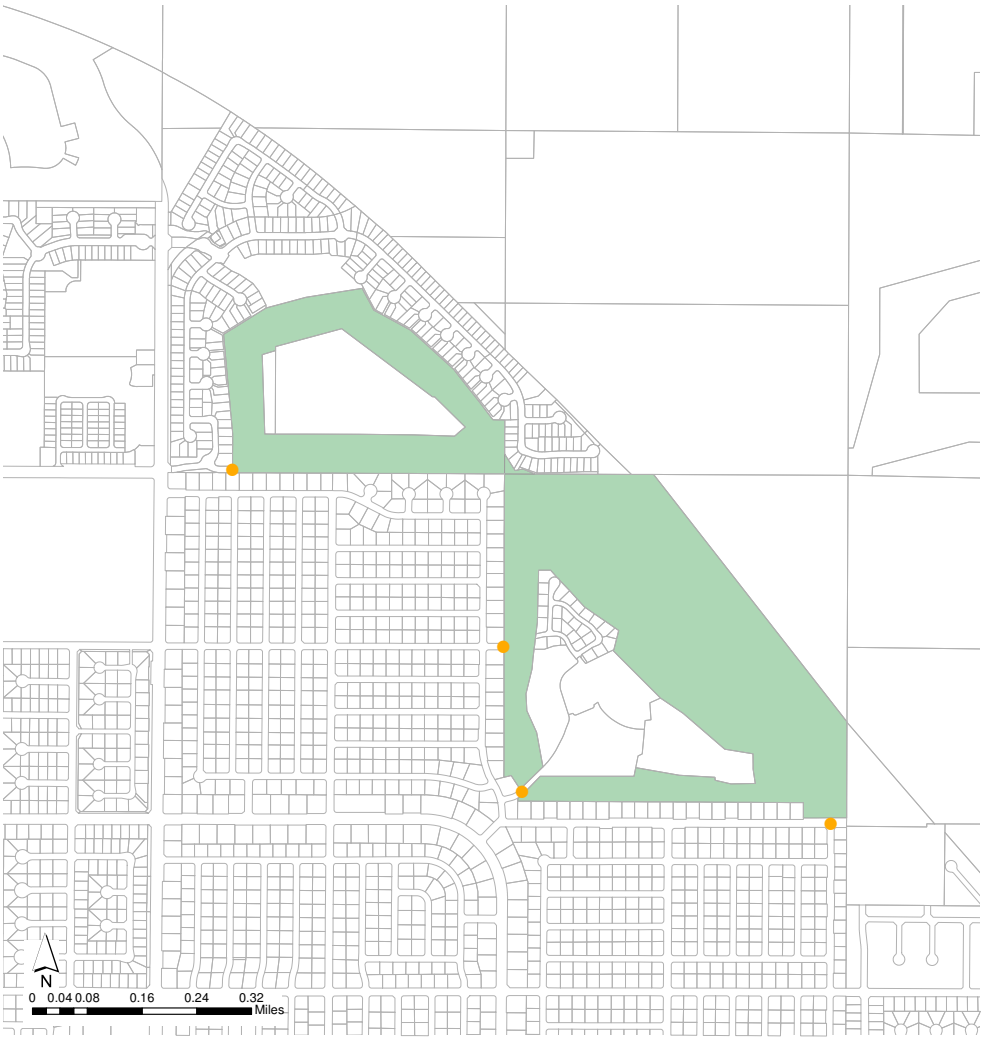

figure A-59. Access Nodes

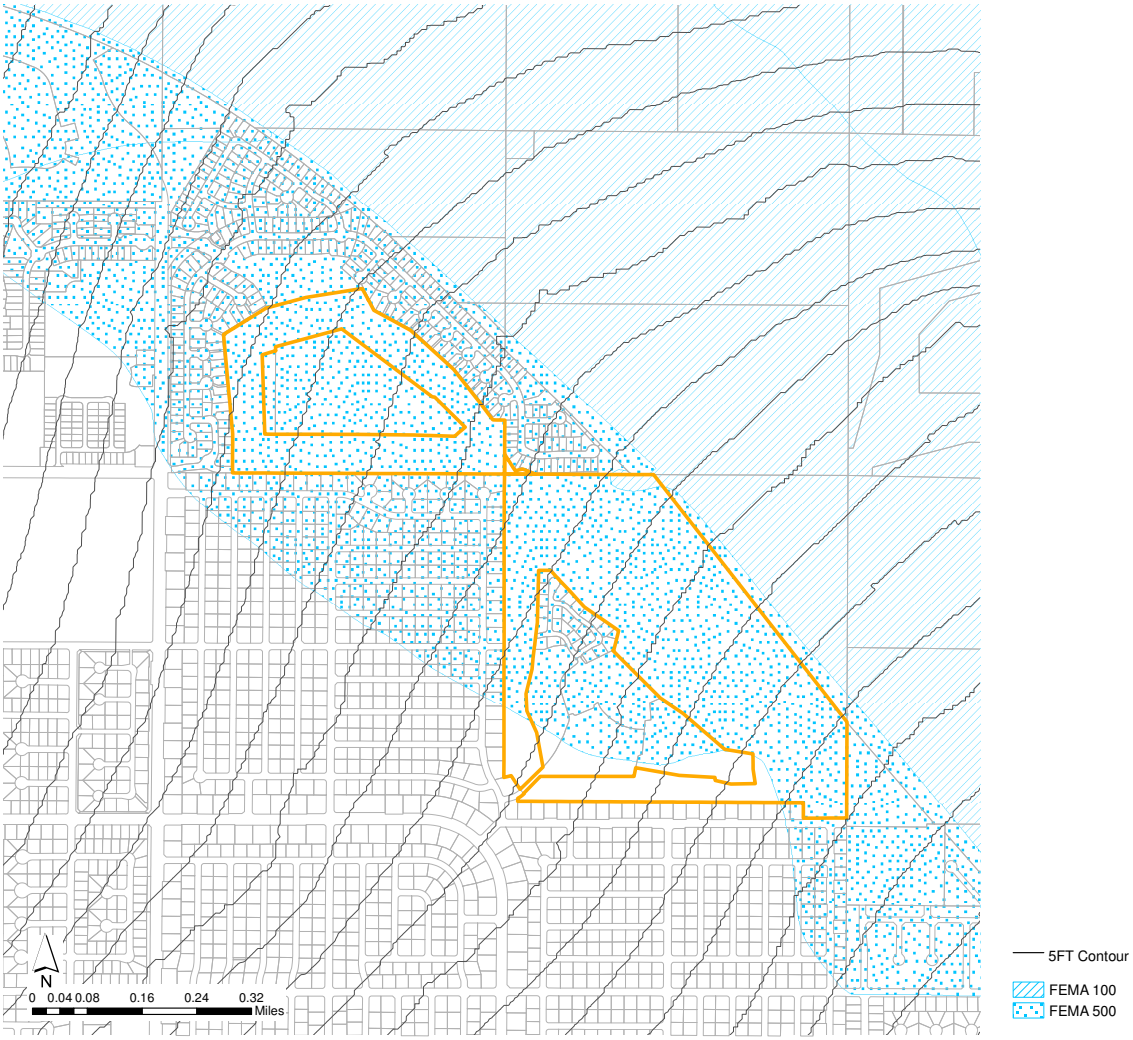

figure A-60. Floodplain

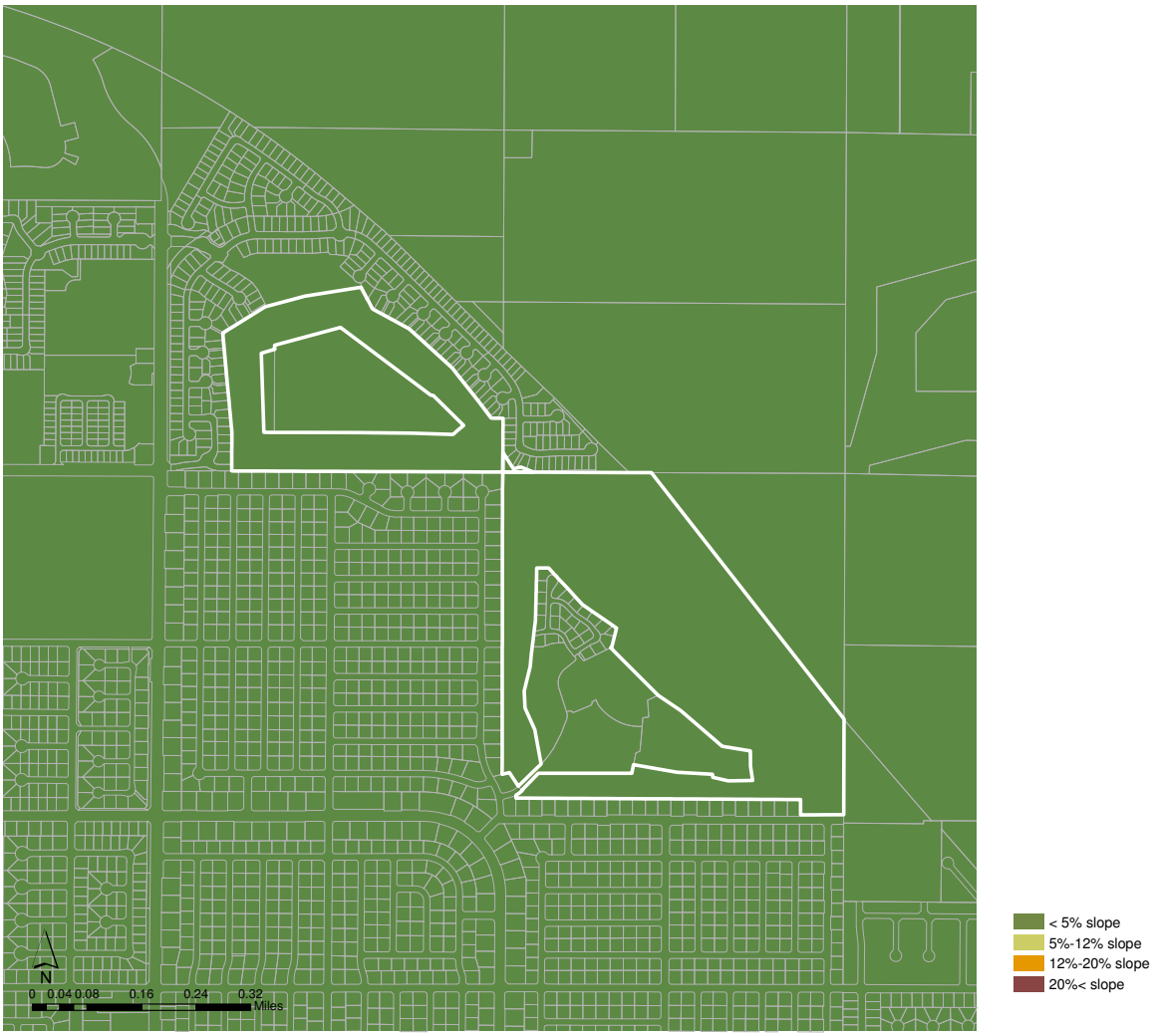

figure A-61. Slope

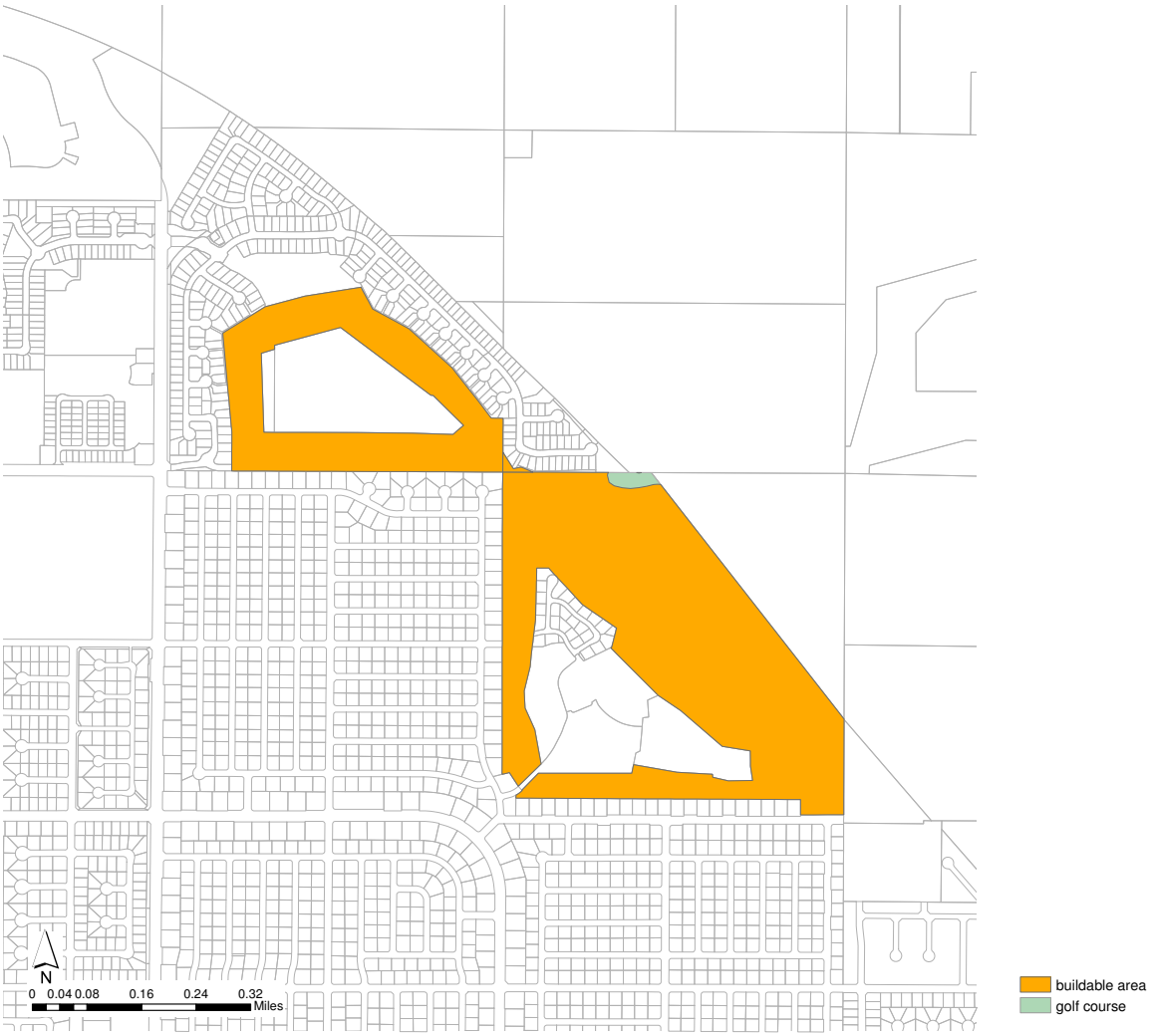

figure A-62. Suitability Analysis

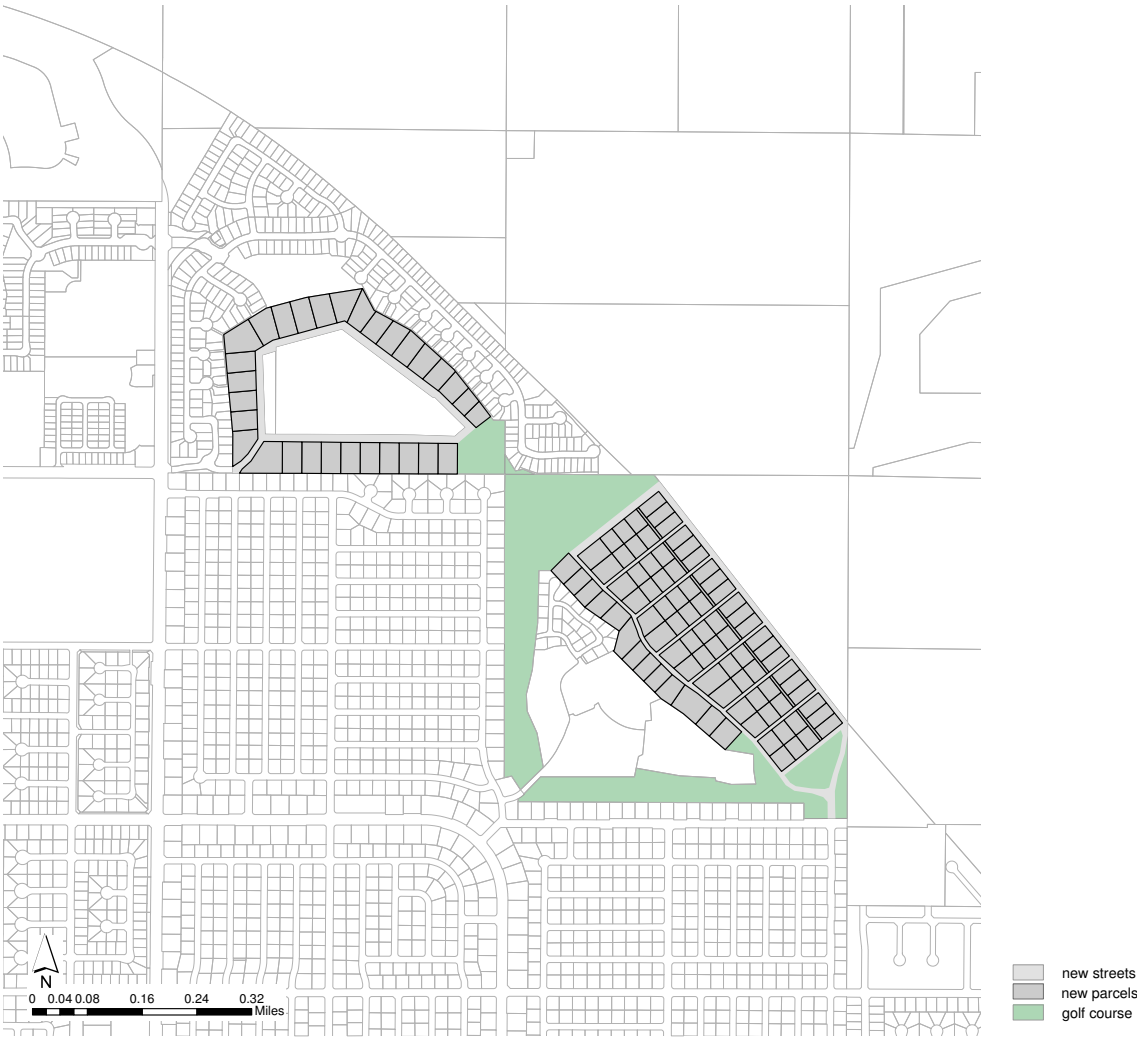

figure A-63. Subdivision Plan

figure A-64. Regional Context: Suburban

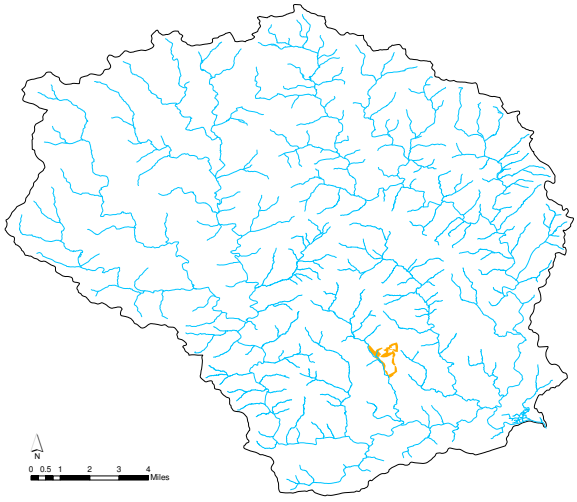

figure A-65. Watershed

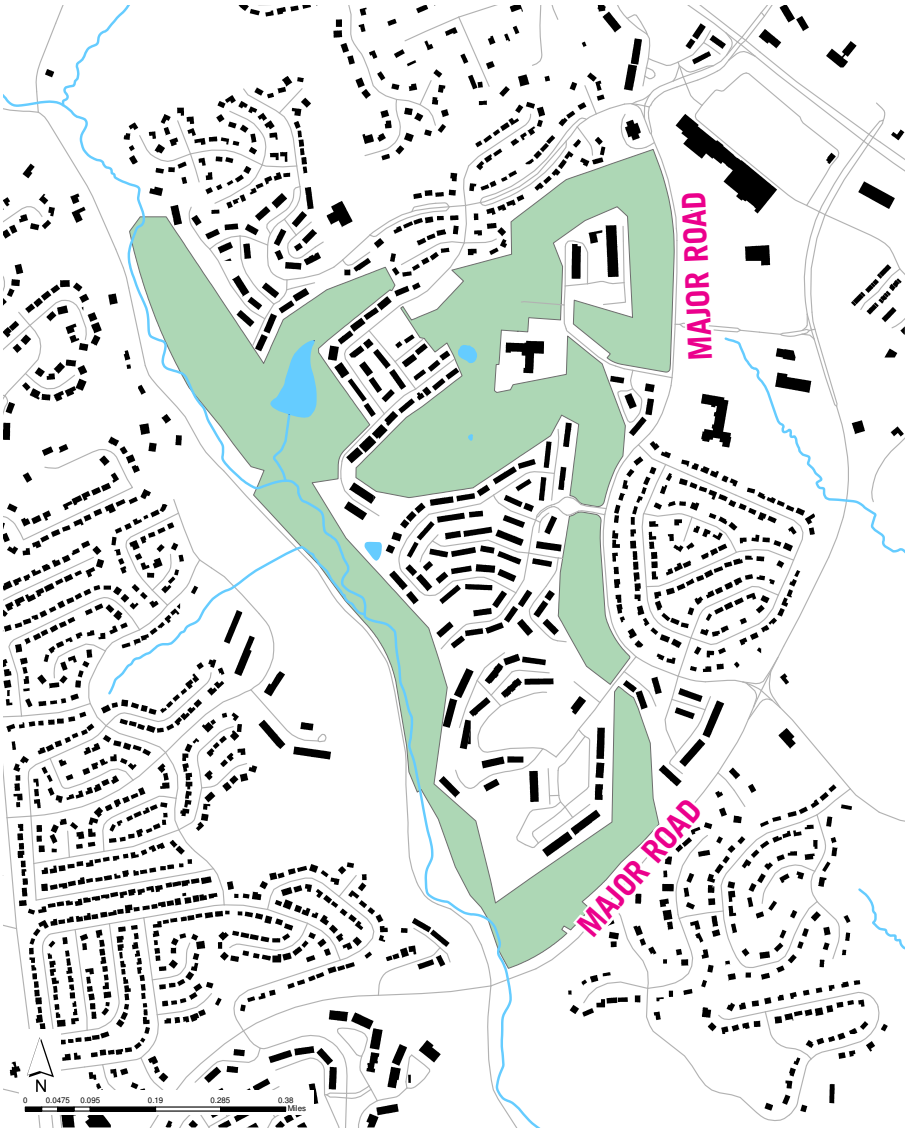

figure A-66. Buildings and Centerlines

figure A-67. Tissues

figure A-68. Access Nodes

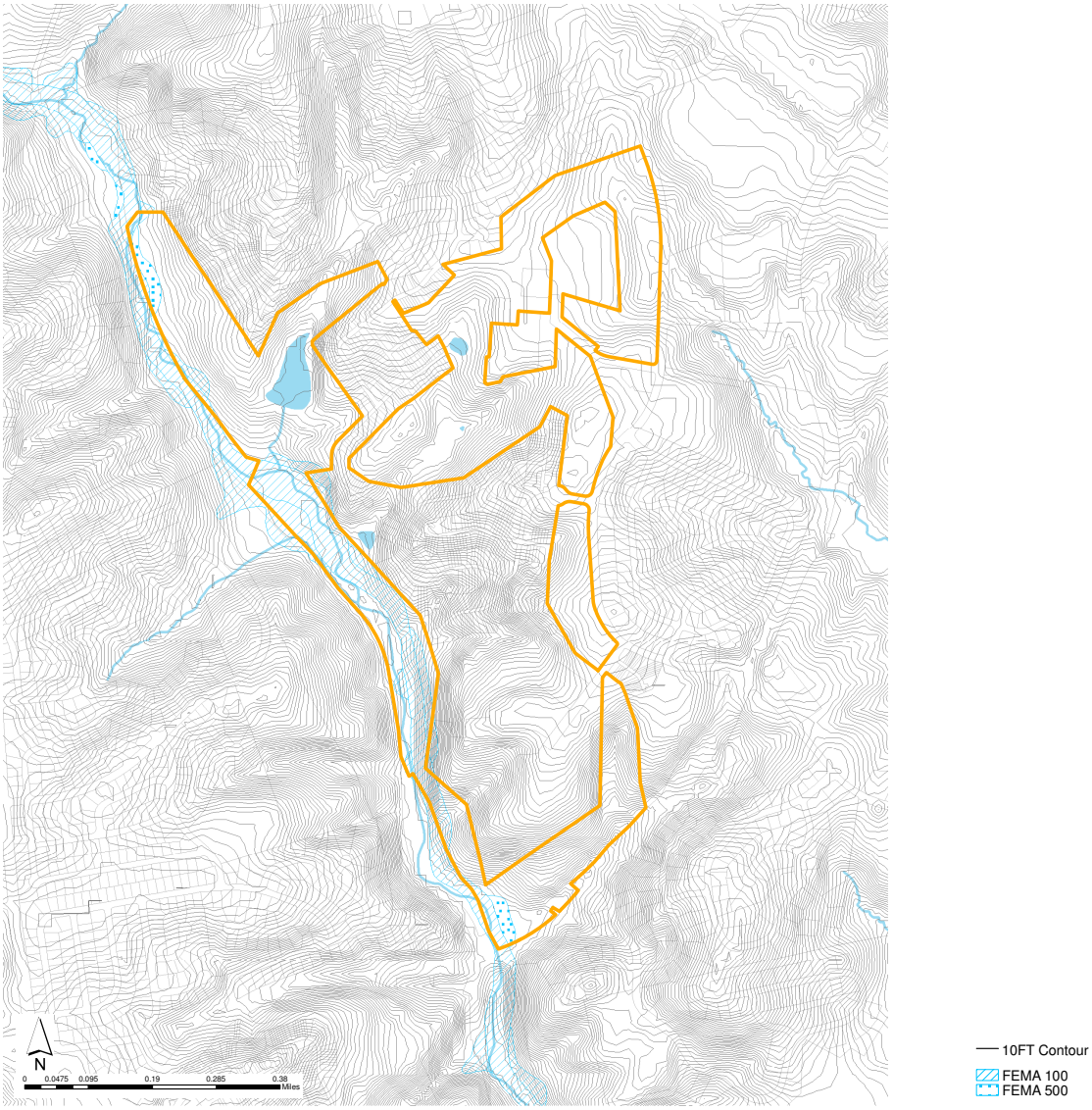

figure A-69. Floodplain

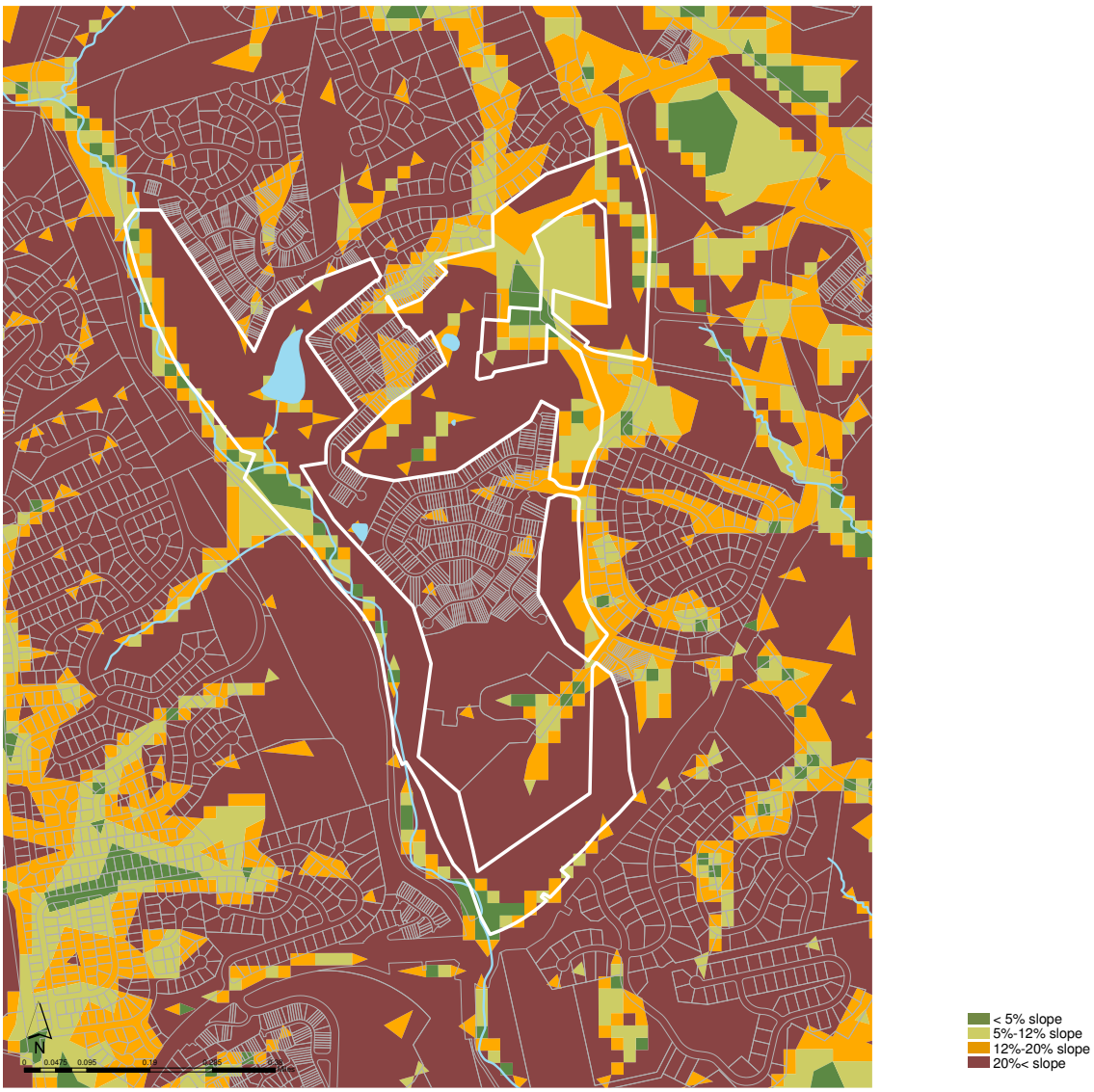

figure A-70. Slope

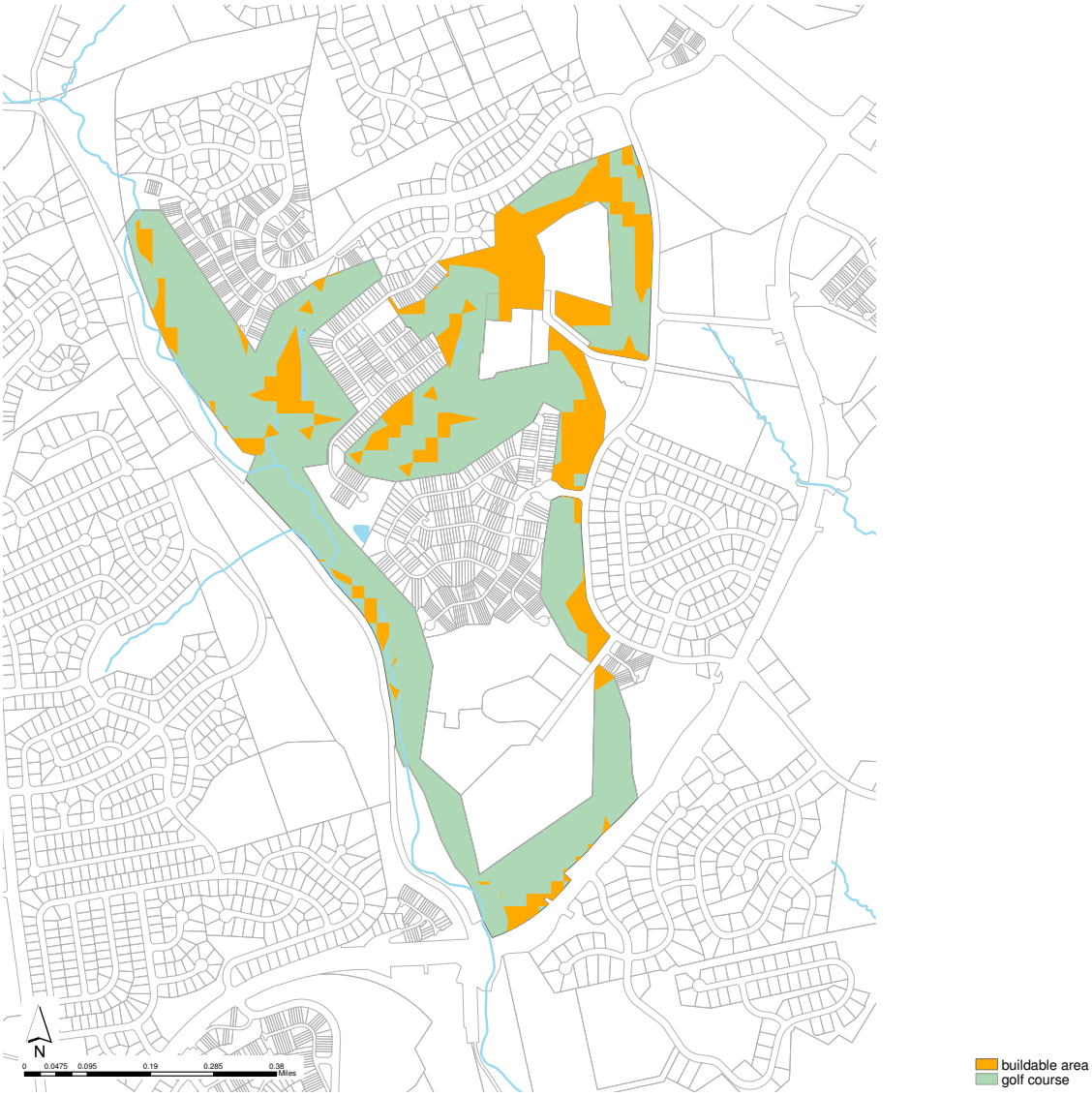

figure A-71. Suitability Analysis

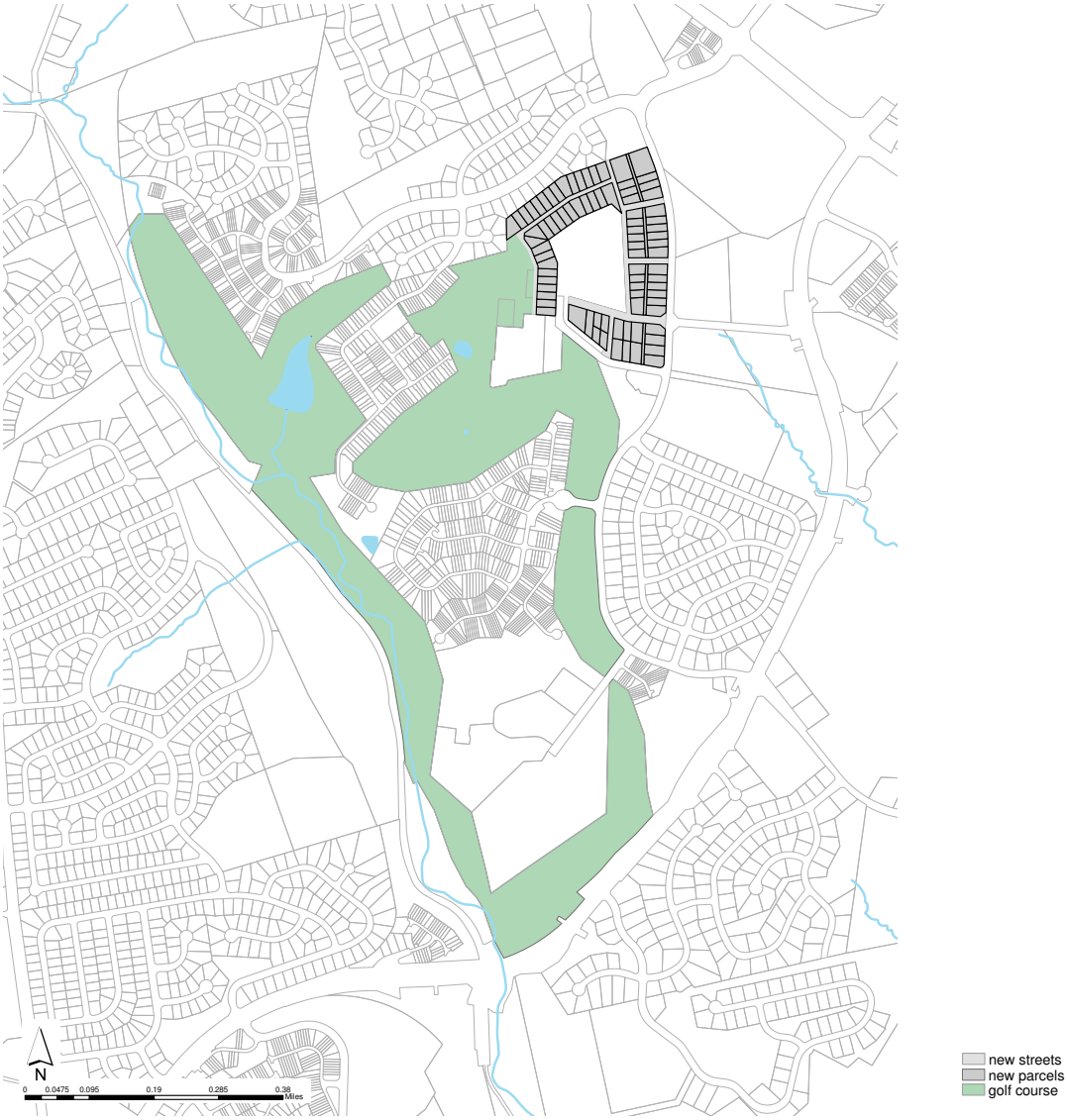

figure A-72. Subdivision Plan

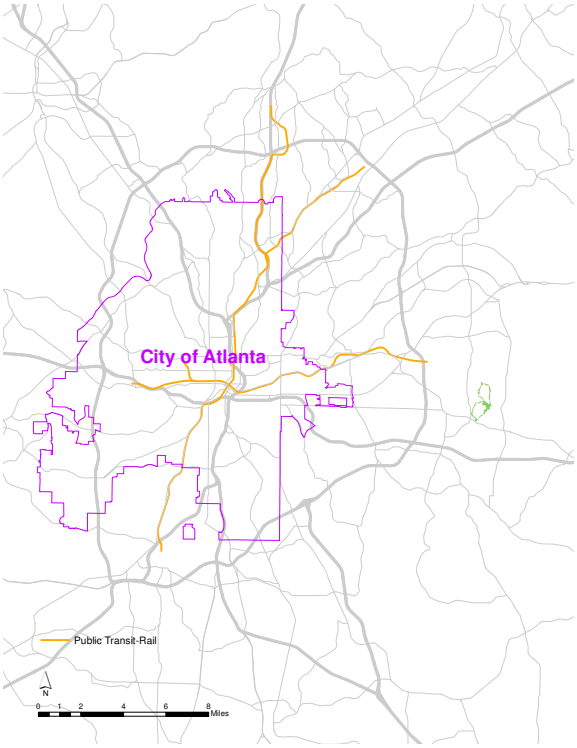

figure A-73. Regional Context: Suburban

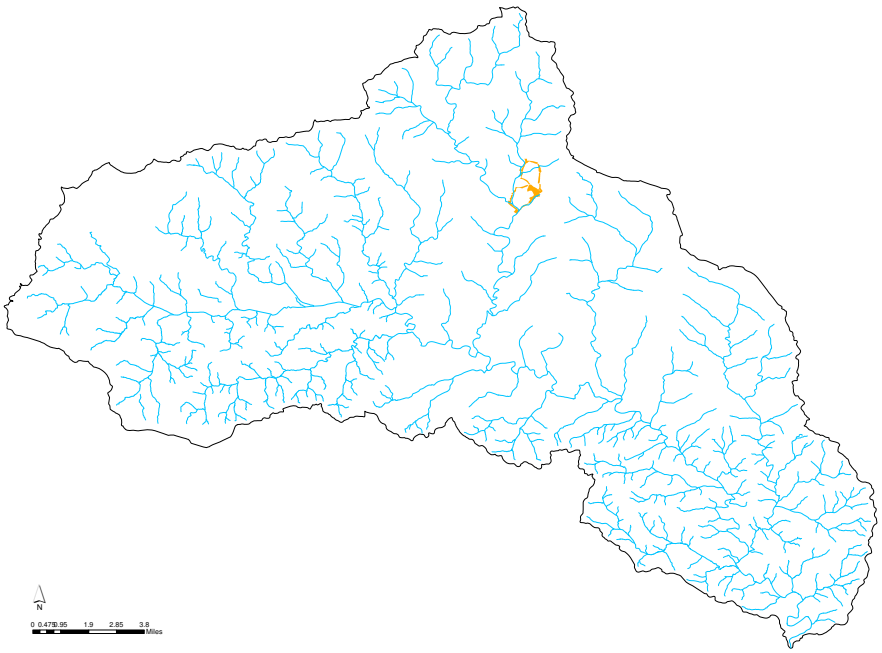

figure A-74. Watershed

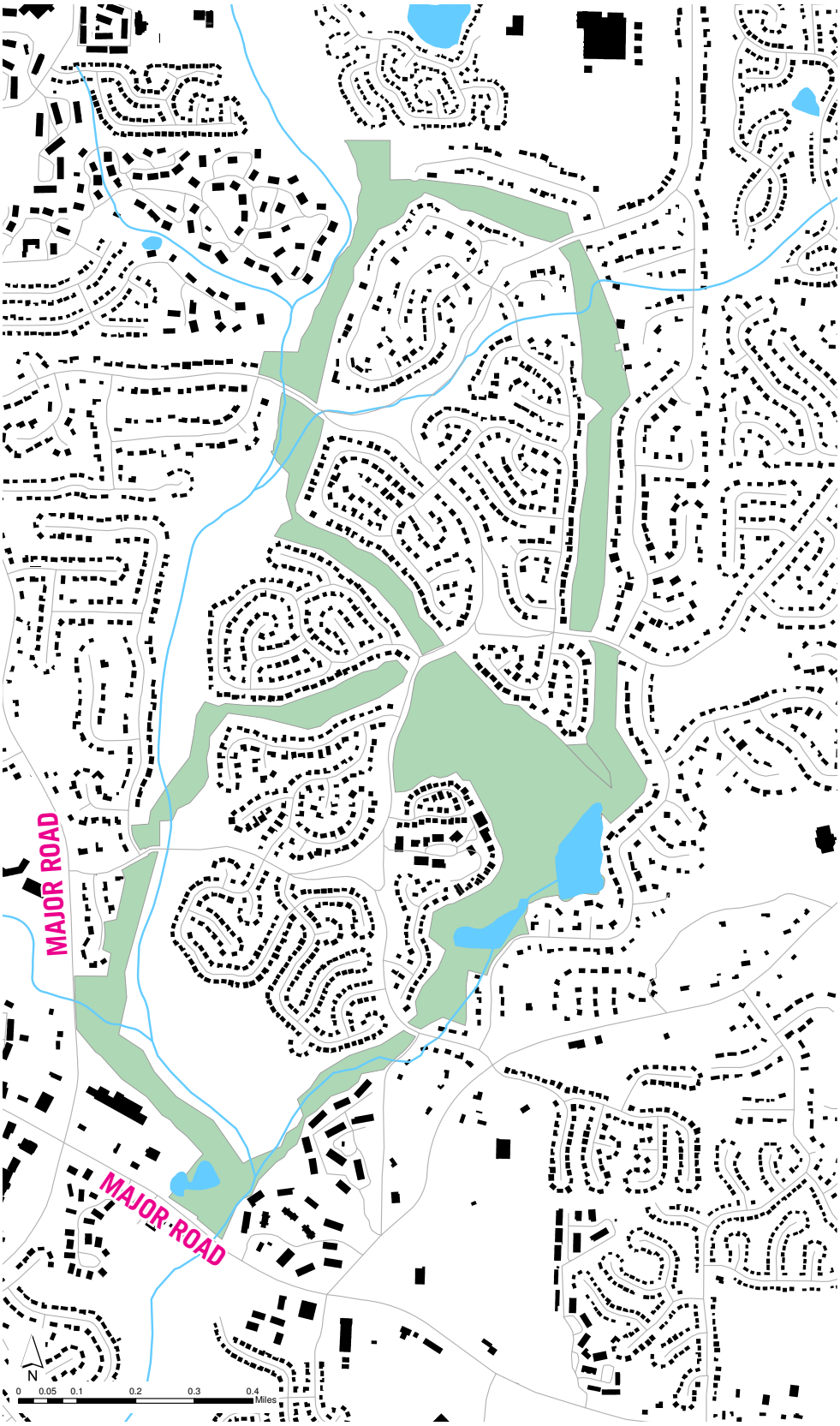

figure A-75. Buildings and Centerlines

figure A-76. Tissues

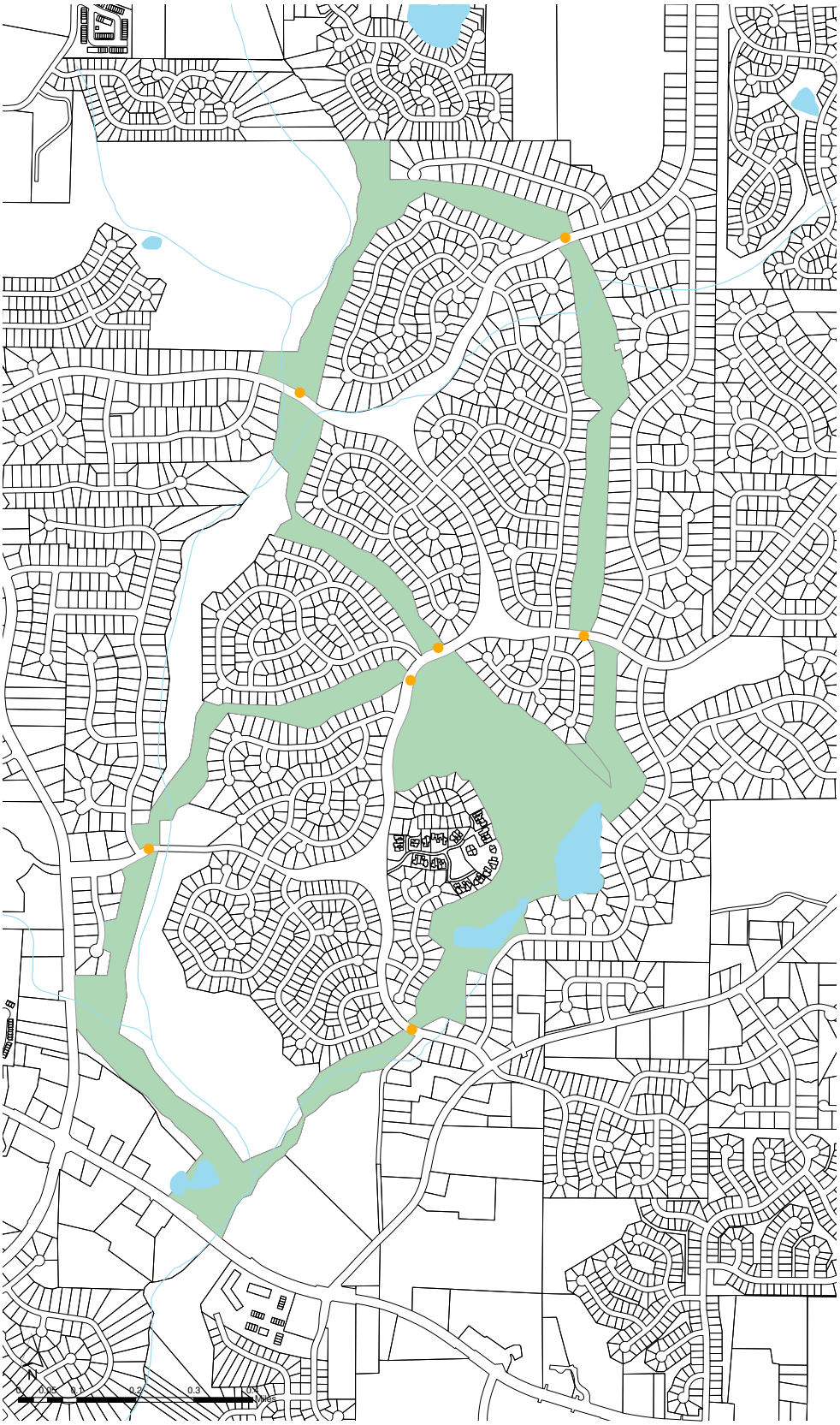

figure A-77. Access Nodes

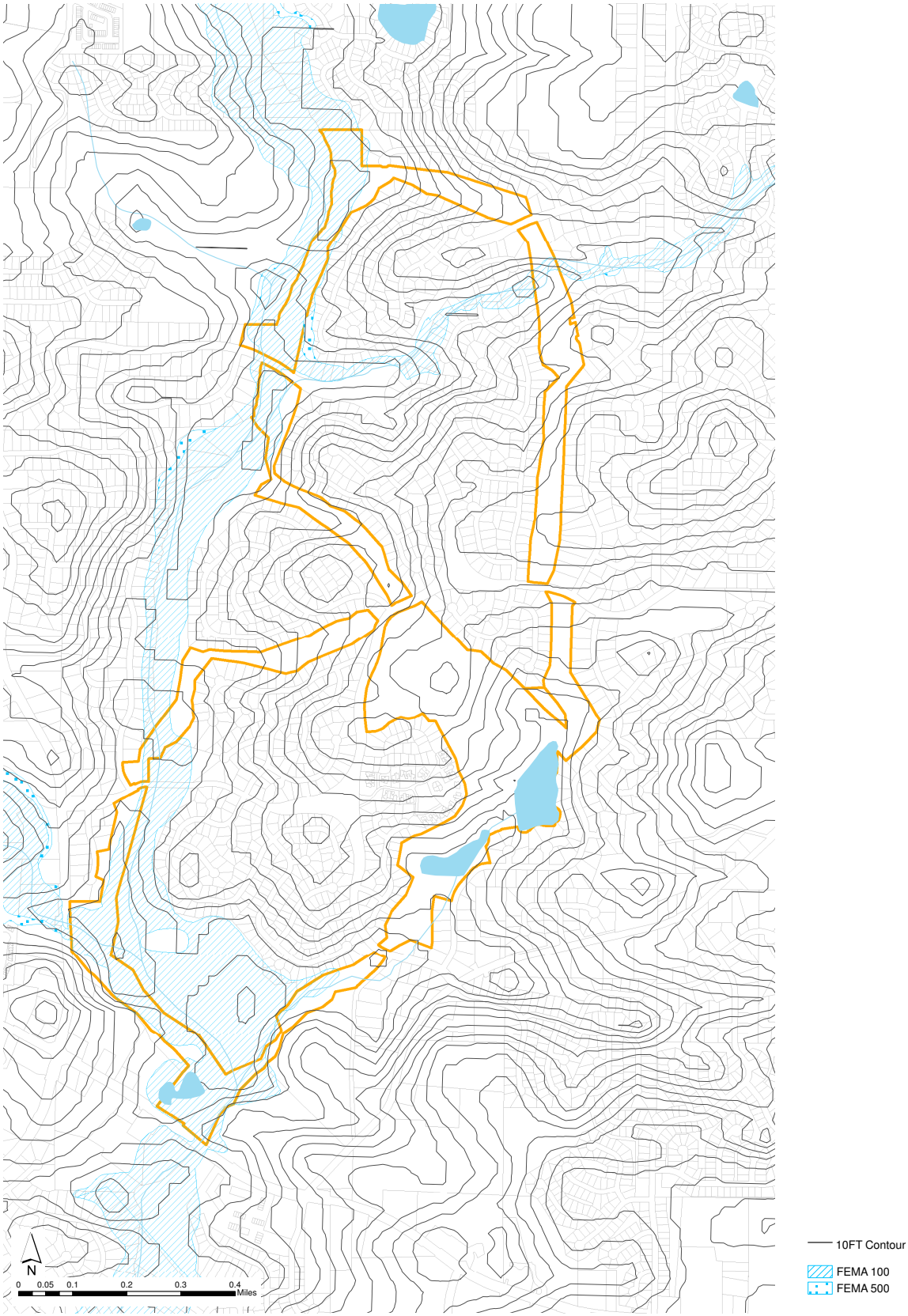

figure A-78. Floodplain

figure A-79. Slope

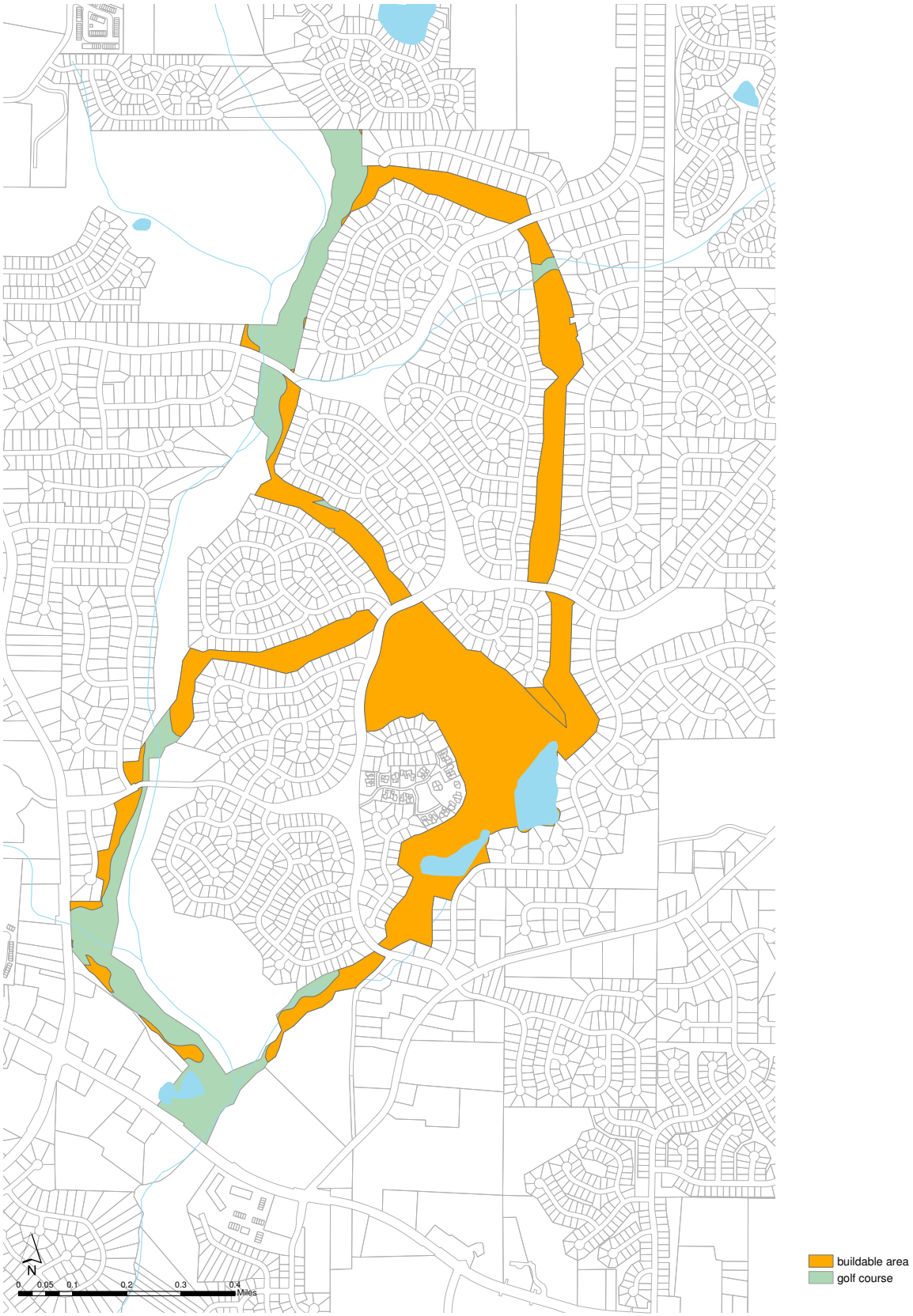

figure A-80. Suitability Analysis

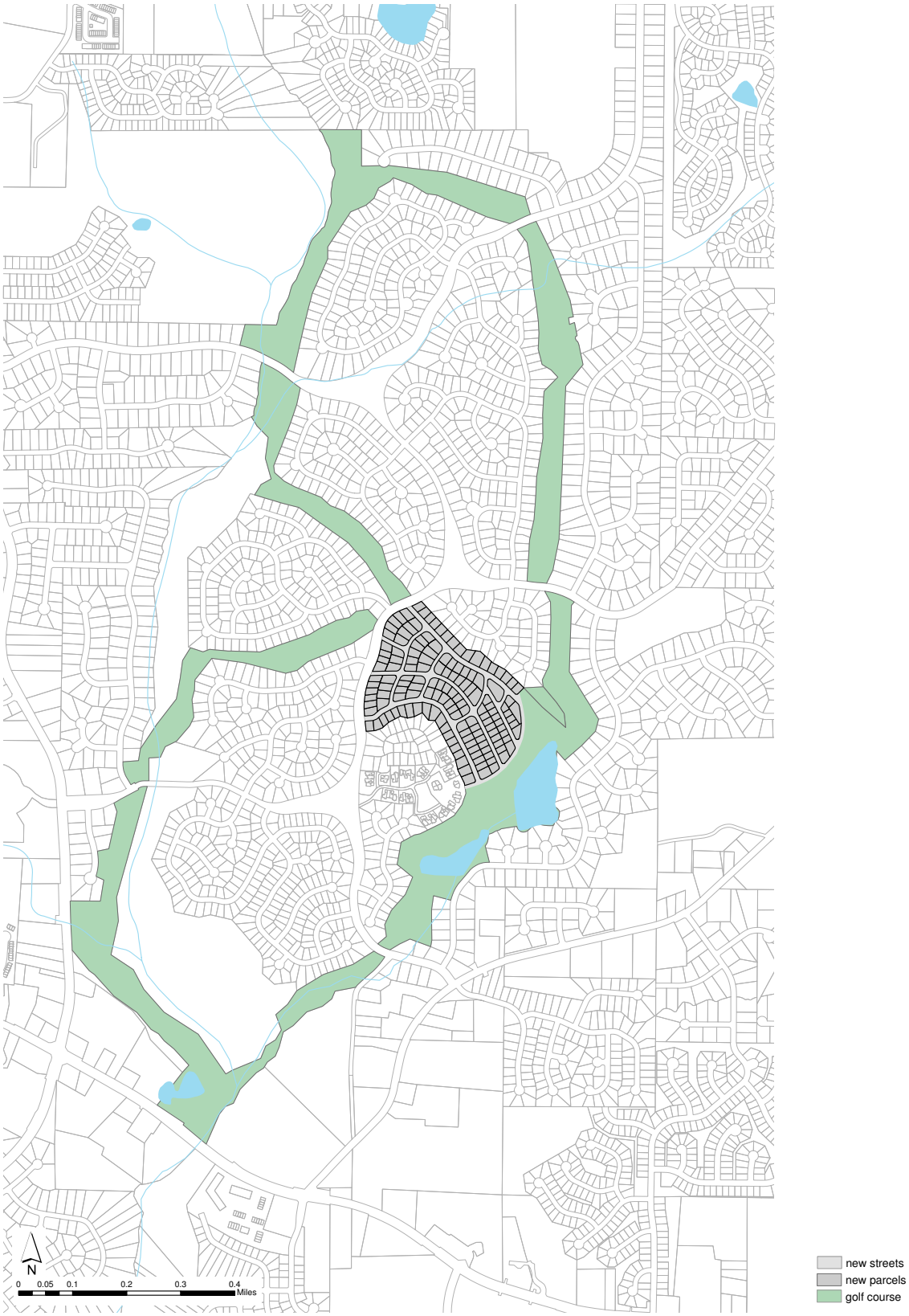

figure A-81. Subdivision Plan

APPENDIX B

RAW NUMERICAL ANALYSIS

Subdivision Plan Statistics

	NAME	TYPE	TISSUE	Golf Course SF	Total Suitable Area SF	Public ROW SF	Built Area SF	Buildable Lots #	Streets:Lots Ratio	Built Area:Lots Ratio	Developable Area:Lots Ratio
1	Lakeview Country Club	Core	Resilient	10,900,175	2,927,591	318,112	983,306	100	3,181	9,833	29,276
2	Fort Mcpherson Golf Course	Core	Campus/Elastic	7,277,970	4,852,430	815,555	1,680,965	201	4,057	8,363	24,141
3	Rolling Knolls Country Club	Core	Static	2,062,694	1,675,043	311,023	1,201,749	156	1,994	7,704	10,737
4	Spring Hill Golf and Country Club	Double Fairway	Resilient	8,219,618	8,147,428	769,196	3,517,037	203	3,789	17,325	40,135
5	Raintree Golf Resort	Double Fairway	Campus/Elastic	5,370,083	0	0	0	0	-	-	-
6	Elkhorn Country Club	Double Fairway	Static	4,025,263	3,959,473	334,212	1,307,038	155	2,156	8,433	25,545
7	Whitewater Country Club	Shoestring	Resilient	5,366,997	5,326,958	698,979	2,928,487	115	6,078	25,465	46,321
8	Pike Creek Golf Club	Shoestring	Campus/Elastic	7,140,212	1,781,037	184,160	890,881	86	2,141	10,359	20,710
9	Hidden Hills Golf and Country Club	Shoestring	Static	8,187,563	6,149,051	380,008	1,188,840	151	2,585	8,087	41,830

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